



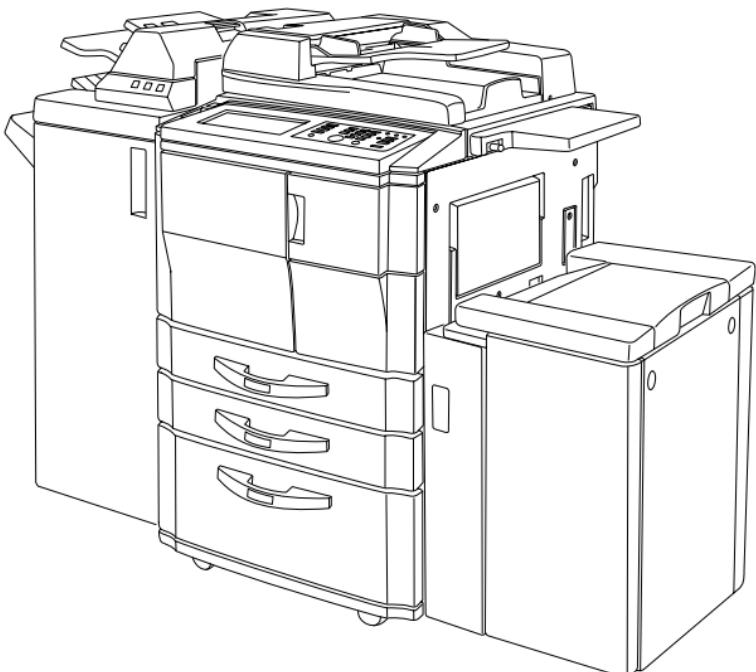
MINOLTA

Service Manual

[General]

The essentials of Imaging

Di551/Di650



**There are using both Official Options name and Popular Options name
in the Di551 / Di650 Service Manual and Option Service Manual.**

EDH	:	RADF
FN-6, FN-112, FN-113	:	FNS
C-403, C-404	:	LT & LCT
Cover Inserter B	:	PI
PK-2, PK-5	:	PK
ZK-2	:	PZ
In-System Writer	:	ISW

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SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand them before doing service work.

IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this copier as well as the risk of damage to the copier, Minolta Corporation strongly recommends that all servicing be performed only by Minolta-trained service technicians.

Changes may have been made to this copier to improve its performance after this Service Manual was printed. Accordingly, Minolta Corporation does not warrant, either explicitly or implicitly, that the information contained in this Service Manual is complete and accurate.

The user of this Service Manual must assume all risks of personal injury and/or damage to the copier while servicing the copier for which this Service Manual is intended.

Therefore, this Service Manual must be carefully read before doing service work both in the course of technical training and even after that, for performing maintenance and control of the copier properly.

Keep this Service Manual also for future service.

DANGER, WARNING, AND CAUTION SYMBOLS AND EXPRESSIONS

In this Service Manual, each of three expressions "△DANGER," "△WARNING," and "△CAUTION" is defined as follows together with a symbol mark to be used in a limited meaning.

When servicing the copier, the relevant works (disassembling, reassembling, adjustment, repair, maintenance, etc.) need to be conducted with utmost care.



DANGER :Action having a high possibility of suffering death or serious injury



WARNING:Action having a possibility of suffering death or serious injury



CAUTION :Action having a possibility of suffering a slight wound, medium trouble, and property damage

Symbols used for important warning items are defined as follows:



Precaution



General precaution



Electric shock



Heated surface



Prohibition



General prohibition



Do not touch with wet hand



Do not disassemble



Direction



General instruction



Unplug



Ground/Earth

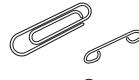
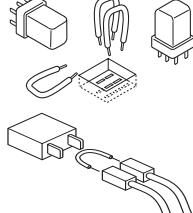
SAFETY WARNINGS

[1] MODIFICATIONS NOT AUTHORIZED BY MINOLTA

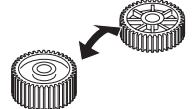
Minolta copiers are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

Copier design is a highly complicated and delicate process where numerous mechanical, physical, and electrical aspects have to be taken into consideration, with the aim of arriving at proper tolerances and safety factors. For this reason, unauthorized modifications involve a high risk of degradation in performance and safety. Such modifications are therefore strictly prohibited. The points listed below are not exhaustive, but they illustrate the reasoning behind this policy.

⚠ PROHIBITED ACTIONS:

- Using any cables or power cord not specified by Minolta.
 
- Using any fuse or thermostat not specified by Minolta. Safety will not be assured, leading to a risk of fire and injury.
 
- Disabling fuse functions or bridging fuse terminals with wire, metal clips, solder or similar object.
 
- Disabling relay functions (such as wedging paper between relay contacts)

- Disabling safety functions (interlocks, safety circuits, etc.) Safety will not be assured, leading to a risk of fire and injury.

- Making any modification to the copier unless instructed by Minolta

- Using parts not specified by Minolta
 

[2] CHECKPOINTS WHEN PERFORMING ON-SITE SERVICE

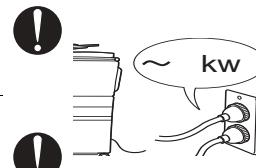
Minolta copiers are extensively tested before shipping, to ensure that all applicable safety standards are met, in order to protect the customer and customer engineer (hereafter called the CE) from the risk of injury. However, in daily use, any electrical equipment may be subject to parts wear and eventual failure. In order to maintain safety and reliability, the CE must perform regular safety checks.

1. Power Supply

⚠ WARNING: Wall Outlet

- Check that mains voltage is as specified. Plug the power cord into the dedicated wall outlet with a capacity greater than the maximum power consumption.

If excessive current flows in the wall outlet, fire may result.



- If two or more power cords can be plugged into the wall outlet, the total load must not exceed the rating of the wall outlet.

If excessive current flows in the wall outlet, fire may result.

⚠ WARNING: Power Plug and Cord

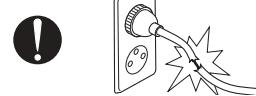
- Make sure the power cord is plugged in the wall outlet securely.

Contact problems may lead to increased resistance, overheating, and the risk of fire.



- Check whether the power cord is damaged. Check whether the sheath is damaged.

If the power plug, cord, or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by Minolta. Using the damaged power cord may result in fire or electric shock.



- When using the power cord (inlet type) that came with this copier, be sure to observe the following precautions:

- Make sure the copier-side power plug is securely inserted in the socket on the rear panel of the copier.
Secure the cord with a fixture properly.



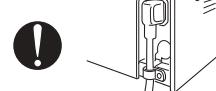
- If the power cord or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by Minolta.

If the power cord (inlet type) is not connected to the copier securely, a contact problem may lead to increased resistance, overheating, and risk of fire.



- Check whether the power cord is not stepped on or pinched by a table and so on.

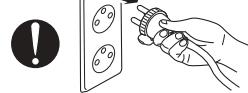
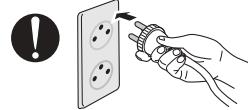
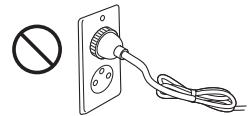
Overheating may occur there, leading to a risk of fire.



SAFETY AND IMPORTANT WARNING ITEMS

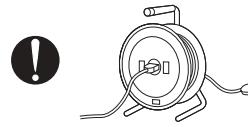
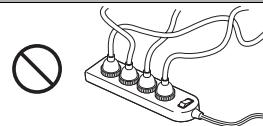
⚠ WARNING: Power Plug and Cord

- Do not bundle or tie the power cord.
Overheating may occur there, leading to a risk of fire.
- Check whether dust is collected around the power plug and wall outlet.
Using the power plug and wall outlet without removing dust may result in fire.
- Do not insert the power plug into the wall outlet with a wet hand.
The risk of electric shock exists.
- When unplugging the power cord, grasp the plug, not the cable.
The cable may be broken, leading to a risk of fire and electric shock.



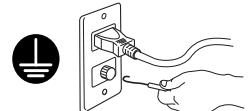
⚠ WARNING: Wiring

- Never use multi-plug adapters to plug multiple power cords in the same outlet.
If used, the risk of fire exists.
- When an extension cord is required, use a specified one.
Current that can flow in the extension cord is limited, so using a too long extension cord may result in fire.
Do not use an extension cable reel with the cable taken up. Fire may result.



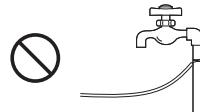
⚠ WARNING: Ground Lead

- Check whether the copier is grounded properly.
If current leakage occurs in an ungrounded copier, you may suffer electric shock while operating the copier. Connect the ground lead to one of the following points:
 - a. Ground terminal of wall outlet
 - b. Ground terminal for which Class D work has been done



⚠ WARNING: Ground Lead

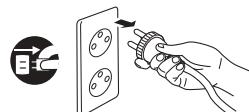
- Pay attention to the point to which the ground lead is connected.
Connecting the ground lead to an improper point such as the points listed below results in a risk of explosion and electric shock:
 - a. Gas pipe (A risk of explosion or fire exists.)
 - b. Lightning rod (A risk of electric shock or fire exists.)
 - c. Telephone line ground (A risk of electric shock or fire exists in the case of lightning.)
 - d. Water pipe or faucet (It may include a plastic portion.)

**2. Installation Requirements****⚠ WARNING: Prohibited Installation Place**

- Do not place the copier near flammable materials such as curtains or volatile materials that may catch fire.
A risk of fire exists.
- Do not place the copier in a place exposed to water such as rain water.
A risk of fire and electric shock exists.

**⚠ WARNING: Nonoperational Handling**

- When the copier is not used over an extended period of time (holidays, etc.), switch it off and unplug the power cord.
Dust collected around the power plug and outlet may cause fire.

**⚠ CAUTION: Temperature and Humidity**

- Do not place the copier in a place exposed to direct sunlight or near a heat source such as a heater.
A risk of degradation in copier performance or deformation exists.
Do not place the copier in a place exposed to cool wind.
Recommended temperature and humidity are as follows:
Temperature: 10°C to 30°C
Humidity: 10% to 80% (no dew condensation)
Avoid other environments as much as possible.

**⚠ CAUTION: Ventilation**

- Do not place the copier in a place where there is much dust, cigarette smoke, or ammonia gas.
Place the copier in a well ventilated place to prevent machine problems and image faults.



⚠ CAUTION: Ventilation

- The copier generates ozone gas during operation, but it is not sufficient to be harmful to the human body.

If a bad smell of ozone is present in the following cases, ventilate the room.

- When the copier is used in a poorly ventilated room
- When taking a lot of copies
- When using multiple copiers at the same time



⚠ CAUTION: Vibration

- When installing the copier, read the Installation Guide thoroughly. Be sure to install the copier in a level and sturdy place.

Constant vibration will cause problems.



- Be sure to lock the caster stoppers.

In the case of an earthquake and so on, the copier may slide, leading to a injury.



⚠ CAUTION: Inspection before Servicing

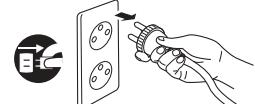
- Before conducting an inspection, read all relevant documentation (Service Manual, technical notices, etc.) and proceed with the inspection following the prescribed procedure, using only the prescribed tools. Do not make any adjustment not described in the documentation.

If the prescribed procedure or tool is not used, the copier may break and a risk of injury or fire exists.



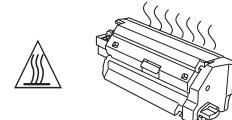
- Before conducting an inspection, be sure to disconnect the power plugs from the copier and options.

When the power plug is inserted in the wall outlet, some units are still powered even if the POWER switch is turned OFF. A risk of electric shock exists.



- The area around the fixing unit is hot.

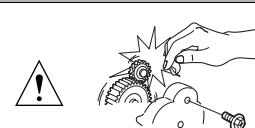
You may get burnt.



⚠ DANGER: Work Performed with the Copier Powered

- Take every care when making adjustments or performing an operation check with the copier powered.

If you make adjustments or perform an operation check with the external cover detached, you may touch live or high-voltage parts or you may be caught in moving gears or the timing belt, leading to a risk of injury.



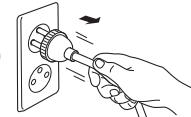
DANGER: Work Performed with the Copier Powered

- Take every care when servicing with the external cover detached.
High-voltage exists around the drum unit. A risk of electric shock exists.



WARNING: Safety Checkpoints

- Check the exterior and frame for edges, burrs, and other damages.
The user or CE may be injured.
- Do not allow any metal parts such as clips, staples, and screws to fall into the copier.
They can short internal circuits and cause electric shock or fire.
- Check wiring for squeezing and any other damage.
Current can leak, leading to a risk of electric shock or fire.
- When disconnecting connectors, grasp the connector, not the cable.
(Specifically, connectors of the AC line and high-voltage parts)
Current can leak, leading to a risk of electric shock or fire.
- Carefully remove all toner remnants and dust from electrical parts and electrode units such as a charging corona unit.
Current can leak, leading to a risk of copier trouble or fire.
- Check high-voltage cables and sheaths for any damage.
Current can leak, leading to a risk of electric shock or fire.
- Check electrode units such as a charging corona unit for deterioration and sign of leakage.
Current can leak, leading to a risk of trouble or fire.
- Before disassembling or adjusting the write unit incorporating a laser, make sure that the power cord has been disconnected.
The laser light can enter your eye, leading to a risk of loss of eyesight.
- Do not remove the cover of the write unit. Do not supply power with the write unit shifted from the specified mounting position.
The laser light can enter your eye, leading to a risk of loss of eyesight.
- When replacing a lithium battery, replace it with a new lithium battery specified in the Parts Guide Manual. Dispose of the used lithium battery using the method specified by local authority.
Improper replacement can cause explosion.

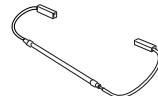


SAFETY AND IMPORTANT WARNING ITEMS

⚠ WARNING: Safety Checkpoints

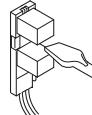
- After replacing a part to which AC voltage is applied (e.g., optical lamp and fixing lamp), be sure to check the installation state.

A risk of fire exists.



- Check the interlock switch and actuator for loosening and check whether the interlock functions properly.

If the interlock does not function, you may receive an electric shock or be injured when you insert your hand in the copier (e.g., for clearing paper jam).



- Make sure the wiring cannot come into contact with sharp edges, burrs, or other pointed parts.

Current can leak, leading to a risk of electric shock or fire.



- Make sure that all screws, components, wiring, connectors, etc. that were removed for safety check and maintenance have been reinstalled in the original location. (Pay special attention to forgotten connectors, pinched cables, forgotten screws, etc.)

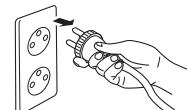
A risk of copier trouble, electric shock, and fire exists.



⚠ HANDLING OF MATERIALS FOR SERVICING

- Unplug the power cord from the wall outlet.

Drum cleaner (isopropyl alcohol) and roller cleaner (acetone-based) are highly flammable and must be handled with care. A risk of fire exists.



- Do not replace the cover or turn the copier ON before any solvent remnants on the cleaned parts have fully evaporated.

A risk of fire exists.



- Use only a small amount of cleaner at a time and take care not to spill any liquid. If this happens, immediately wipe it off.

A risk of fire exists.



- When using any solvent, ventilate the room well.

Breathing large quantities of organic solvents can lead to discomfort.





DANGER: HANDLING OF MATERIALS FOR SERVICING

- Toner and developer are not harmful substances, but care must be taken not to breathe excessive amounts or let the substances come into contact with eyes, etc. It may be stimulative.

If the substances get in the eye, rinse with plenty of water immediately.

When symptoms are noticeable, consult a physician.



- Never throw the used cartridge and toner into fire.

You may be burned due to dust explosion.



[3] CONCLUSION

1. Safety of users and customer engineers depends highly on accurate maintenance and administration. Therefore, safety can be maintained by the appropriate daily service work conducted by the customer engineer.
2. When performing service, each copier on the site must be tested for safety. The customer engineer must verify the safety of parts and ensure appropriate management of the equipment.

SAFETY INFORMATION

IMPORTANT INFORMATION

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States.

This copier is certified as a "Class 1" laser product under the U.S.

Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside this copier is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

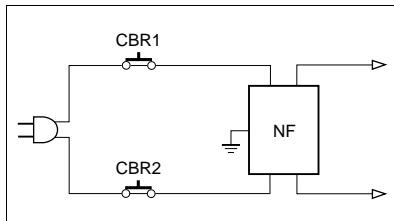
SAFETY CIRCUITS

This machine is provided with the following safety circuits to prevent machine faults from resulting in serious accidents.

- [1] Overall protection circuit
- [2] L2 and L3 (fixing heater lamps) overheating prevention circuit

These safety circuits are described below to provide the service engineer with a renewed awareness of them in order to prevent servicing errors that may impair their functions.

[1] Overall Protection Circuit



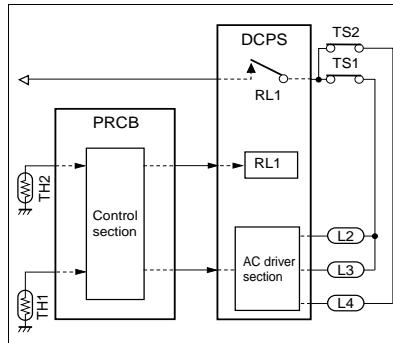
1. Protection by CBR1 and CBR2 (circuit breakers)

CBR1 and CBR2 interrupt the AC line instantaneously when an excessive current flows due to a short in the AC line.

⚠ CAUTION:

The CBR1 and CBR2 functions must not be deactivated under any circumstances.

- [2] Protection by L2, L3 and L4 (fixing heater lamps) overheating prevention circuit



1. Protection by software

The output voltage from TH1 (fixing temperature sensor 1) is read by the CPU. If this voltage is abnormal, L2 (fixing heater lamp 1), L3 (fixing heater lamp 2), L4 (fixing heater lamp 3) and RL1 (main relay) are turned OFF.

⚠ CAUTION:

Do not change the gap between the roller and TH1. When replacing TH1, check the specified mounting dimensions. The RL1 function must not be deactivated under any circumstances.

2. Protection by the hardware circuit

The output voltages from TH1 and TH2 (fixing temperature sensors) are compared with the abnormality judgment reference value in the comparator circuit. If the output voltage from TH1 or TH2 exceeds the reference value, L2 (fixing heater lamp 1), L3 (fixing heater lamp 2), L4 (fixing heater lamp 3) and RL1 (main relay) are turned OFF in hardware means.

⚠ CAUTION:

Periodically check the TH2 face contact-ing the roller, and replace TH2 if any abnormality is detected.

Since TH1 (fixing temperature sensor) face does not contact the roller, check the distance from the roller and the sensor orientation if any abnormality is detected. The RL1 function must not be deactivated under any circumstances.

3. Protection by TS1 (thermostat/U) and TS2 (thermostat/L)

When the temperature of the fixing roller (upper/lower) exceeds the specified value, TSs are turned OFF, thus interrupting the power to L2 (fixing heater lamp/1), L3 (fixing heater lamp/2), and L4 (fixing heater lamp/3) directly.

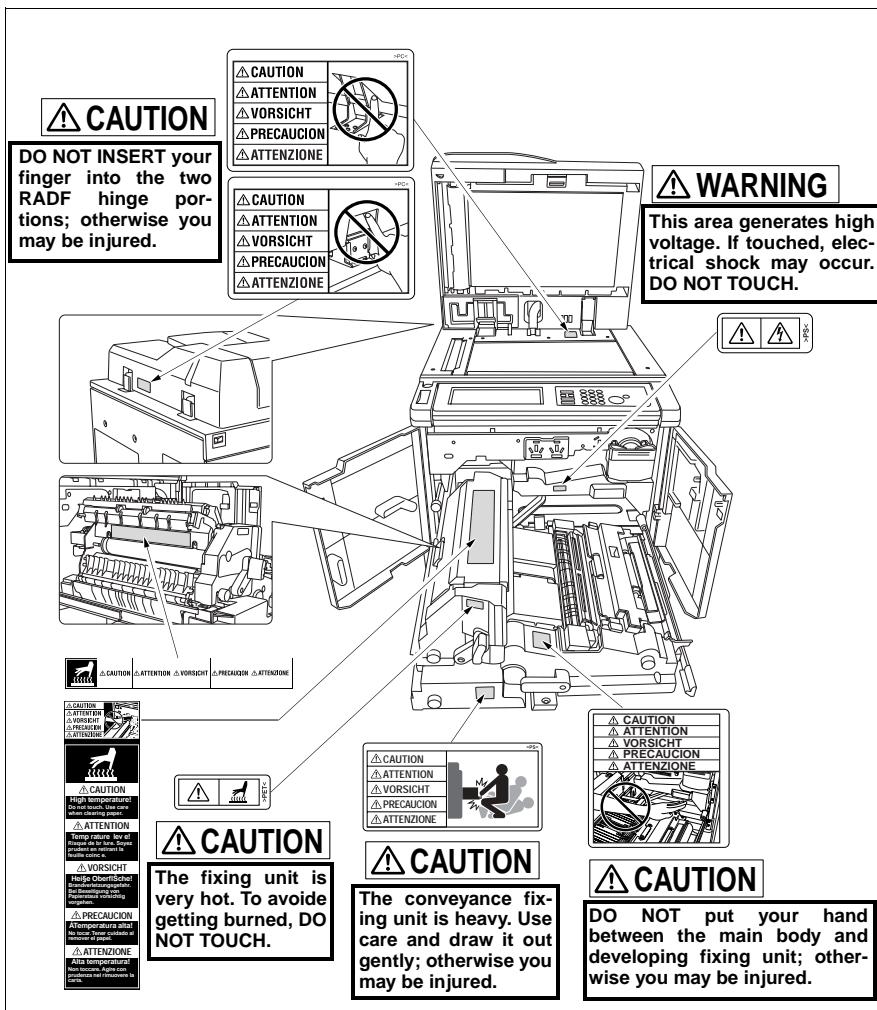
⚠ CAUTION:

Do not use any other electrical conductor in place of TS1 and TS2. Do not change the distance between the roller and TS (thermostat).

INDICATION OF WARNING ON THE MACHINE

Caution labels shown below are attached in some areas on/in the machine.

When accessing these areas for maintenance, repair, or adjustment, special care should be taken to avoid burns and electric shock.



⚠ CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

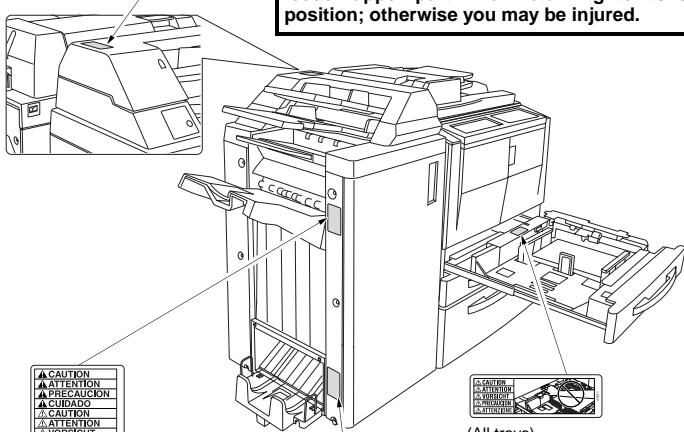
Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, Contact our Service Office.



(Finisher with Cover Inserter B only)

CAUTION

DO NOT insert your finger into the bottom of the feeder upper part when returning to its original position; otherwise you may be injured.



(FN-6/FN-112 Finisher)

CAUTION

Use care after opening the paper exit outlet. **DO NOT** put your hand into it; otherwise you may be injured.



(FN-6 Finisher only)

CAUTION

Inside the lower paper exit outlet is the roller drive unit. **DO NOT** put your hand into it; otherwise you may be injured.

(All trays)

CAUTION

DO NOT put your hand between the main body and tray; otherwise you may be injured.

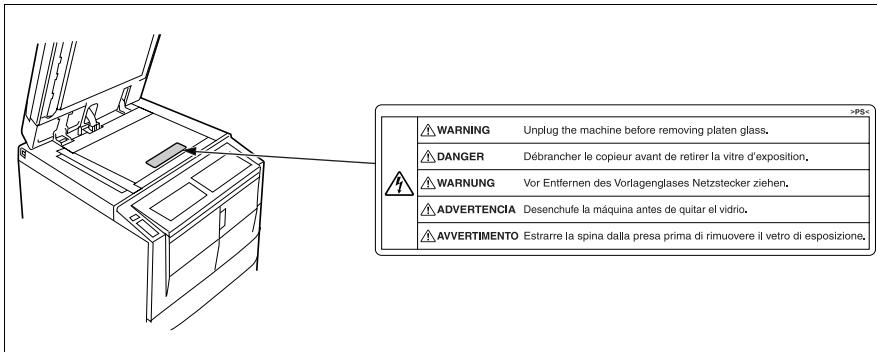
CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

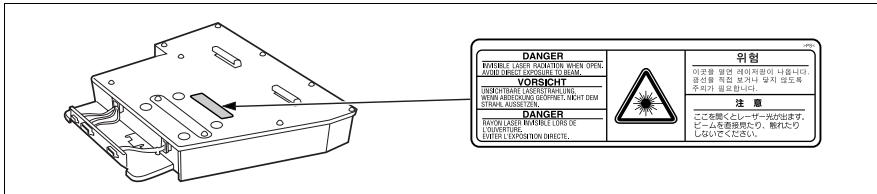
Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, Contact our Service Office.

SAFETY INFORMATION

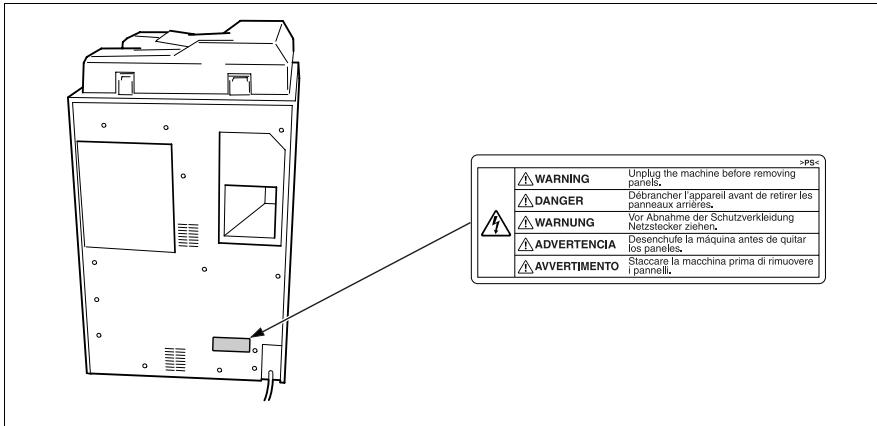
<SCANNER SECTION>



<WRITE UNIT>



<REAR COVER>



CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

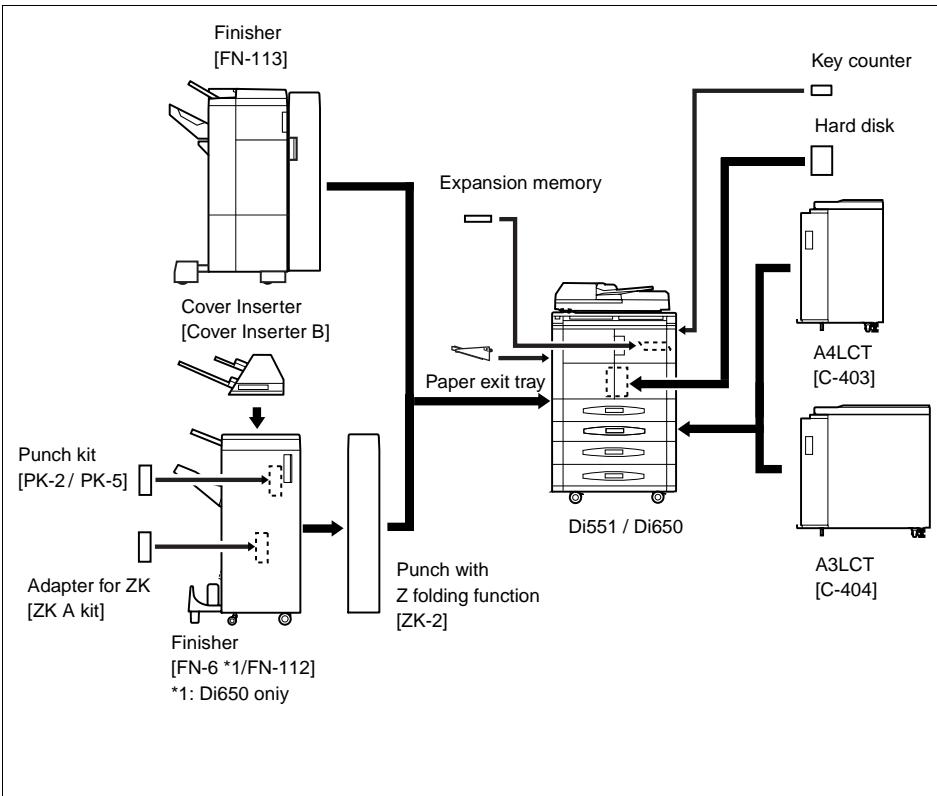
Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, Contact our Service Office.

1

OUTLINE

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OUTLINE OF SYSTEM



PRODUCT SPECIFICATIONS

[1] Type

Installation type:

Console type (floor-mounted)

Copying method:

Indirect electrostatic method

Document tray type:

Fixed

Photosensitive material:

OPC

Sensitizing method:

Laser writing

Paper feed trays:

Three stacked trays

(two for 500 sheets of 80 g/m² or 20 lbs paper,
1500 sheets of 80 g/m² or 20 lbs paper)

Bypass tray for various paper sizes (100
sheets of 80 g/m² paper)

C-403 / C-404

(4000 sheets of 80 g/m² or 20 lbs paper)*1,
*1: Optional

[2] Functions

Applicable document types:

Sheets, book, solid object

Document size:

A3/11x17 max.

Copy paper size:

- Metric area
A3 to A5, 11x17 to 8.5x11, F4
- Inch area
11x17 to 8.5x5.5, A3 to B5R, F4

Wide paper (314 mm x 459 mm max.)

Magnifications

Fixed magnifications:

- Metric area
x1.00, x2.00, x1.41, x1.22, x1.15, x0.86, 0.82,
x0.71, x0.50
- Inch area
x1.00, x2.00, x1.55, x1.29, x1.21, x0.93, 0.77,
x0.65, x0.50

Special ratio magnifications:

3 modes

Zoom magnifications:

x0.25 to x4.00 (in 1% steps)

Vertical magnifications:

x0.25 to x4.00 (in 1% steps)

Horizontal magnifications:

x0.25 to x4.00 (in 1% steps)

Warm-up time:

55-cpm	5.5 minutes max.	20 °C, rated voltage
65-cpm	6 minutes max.	

6 minutes max. (20 °C, rated voltage)

First copy out time (FCOT)

Mode	A4/8.5x11	
Manual	55-cpm	3.4 seconds or shorter
	65-cpm	3.1 seconds or shorter

*Straight paper ejection, platen mode, life size, non AE or AES, without finisher, paper feed from tray 1

Continuous copy speed (life size, copies/min)

Size	cpm	
A4/8.5x11	55-cpm	55
	65-cpm	65

Continuous copy count:

1 to 9999

Copy density selection:

AE or AES, manual (9 steps)

Arbitrary density (2 modes)

E-RDH memory capacity:

Standard 64 MB

Maximum 320 MB

[3] Applicable Copy Paper

Plain paper:

High-quality paper of 60 to 90 g/m² or
17 to 24 lbs

Special paper (by-pass feed only):

OHP film

Blueprint master paper

(both by-pass tray and stacked trays):

Tabs

Plain paper of 50 to 59 g/m² or 13 to 16 lbs

Plain paper of 91 to 200 g/m² or 24 to 45 lbs

[4] Options

Key counter	
LCT	: C-403, C-404
Expansion memory unit	: 64 MB, 128 MB 256 MB *1
Paper exit tray	
Hard disk	: HDD-2
Finisher	: FN-6, FN-113 FN-112 (Di650)
Cover Inserter	: Cover Inserter B
Puncher	: PK-2, PK-5
Puncher with Z-folding	ZK-2

*1 256 MB use the recommend memory

[5] Particulars of Machine

Power supply:

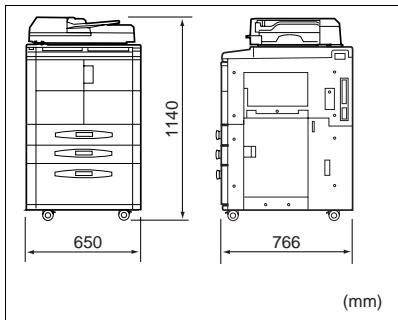
230 VAC -14 to 10.6 % 50/60 Hz
120 VAC ±10 % 60 Hz

Power consumption:

230 V Machine : 2300 W max. (full option)
120 V Machine : 1920 W max. (full option)

Weight: Approx. 203 kg

External dimensions:



[6] Maintenance and Life

Periodic maintenance: Every 250,000 copies
Machine life: 5,000,000 copies or 5 years

[7] Consumables

Developer:	Exclusively for Minolta Di551/Di650
Toner:	Exclusively for Minolta Di551/Di650
Drum:	Exclusively for Minolta Di551/Di650 (φ80)

[8] Environmental Conditions

Temperature: 10 to 30 °C

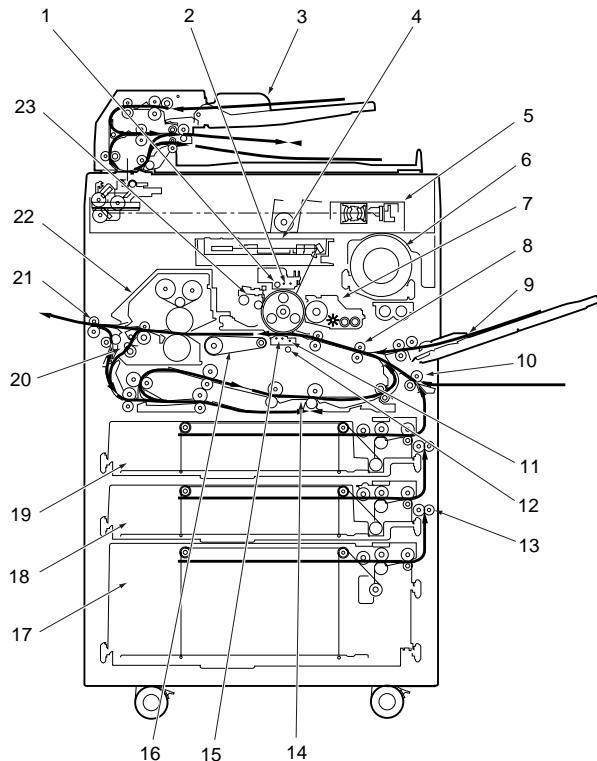
Humidity: 10 to 80 %

Note: The information herein may be subject to change for improvement without notice.

Di551/Di650 LIST OF DIFFERENCE

	Classification	Di551	Di650	Reason
Specification	Warm-up time	5.5 minutes max	6 minutes max	CPM change
	First copy out time (A4)	3.4 seconds or shorter	3.1 seconds or shorter	
	Continuous copy speed (A4)	55 copies	65 copies	
	Developer Toner Drum	Common to Di551/Di650		
Drive Section	Liner speed	280 mm/s (standard) 185 mm/s (thick paper)	370 mm/s (standard) 185 mm/s (thick paper)	CPM change
Write Section	Polygon motor revolutions	33,070rpm (standard) 21,850rpm (thick paper)	37,795rpm (standard) 21,850rpm (thick paper)	
ADU Section	ADU drive board	Exclusively for Di551	Exclusively for Di650	ADU linear speed change
Control	Image control program	Exclusively for Di551	Exclusively for Di650	CPM change
	Printer control program			

CENTRAL CROSS-SECTIONAL VIEW

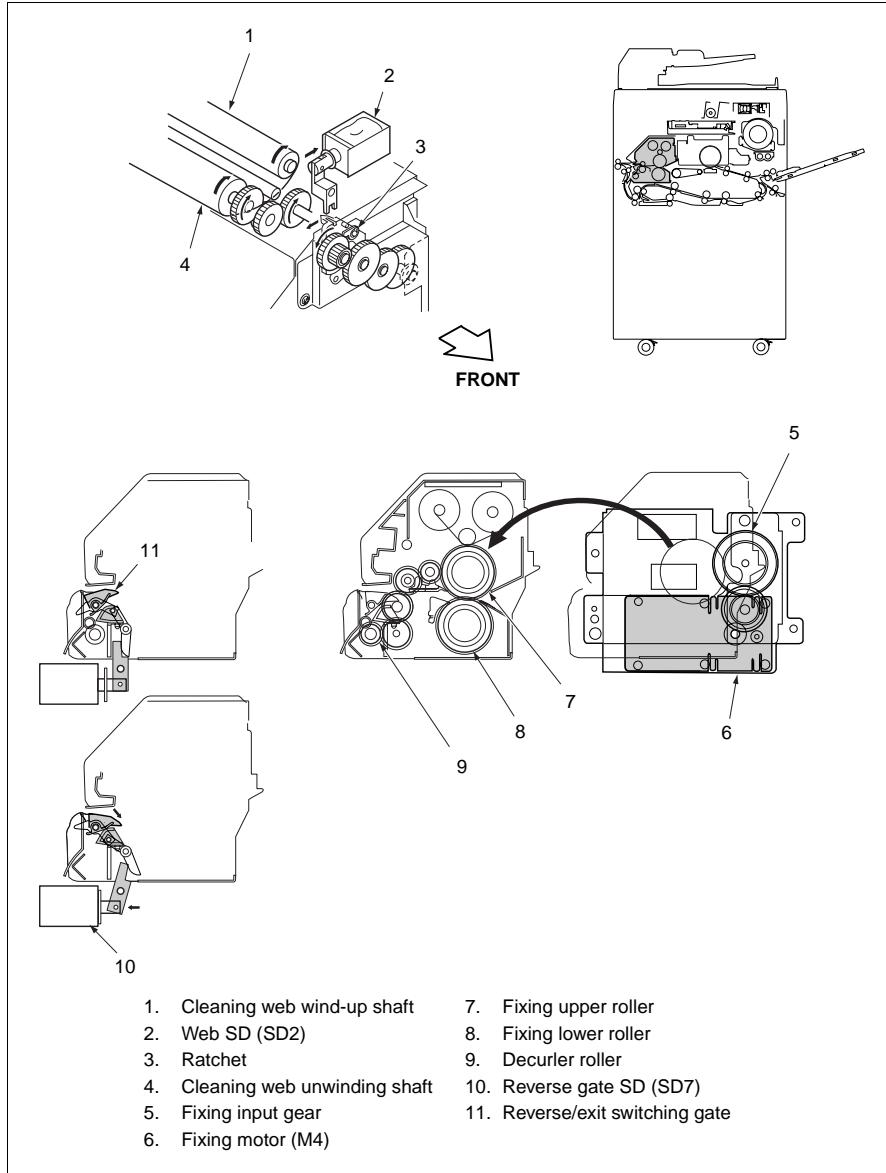


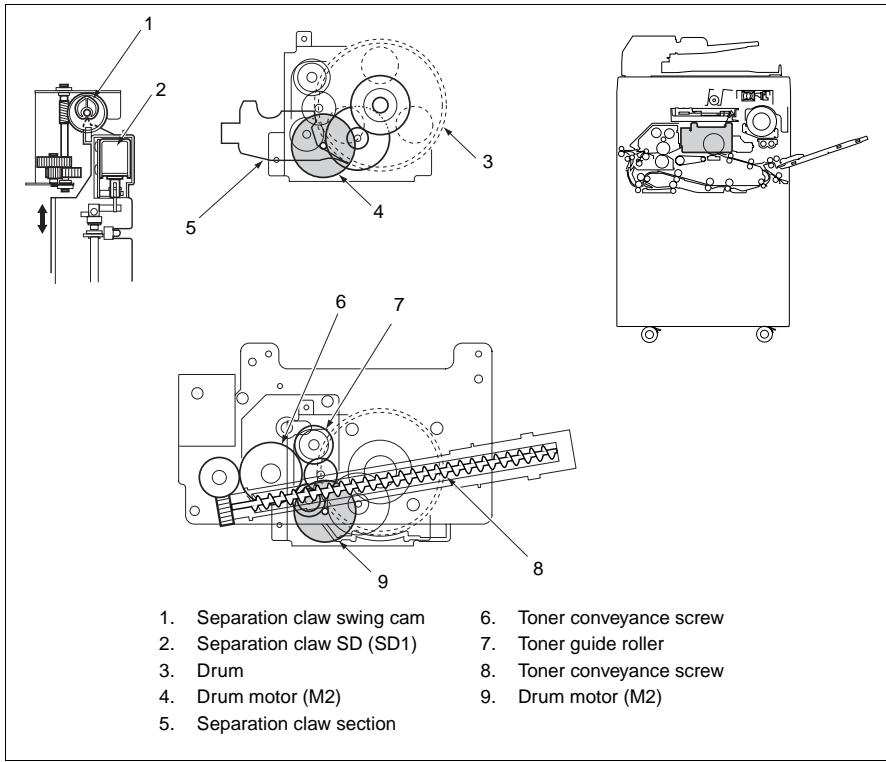
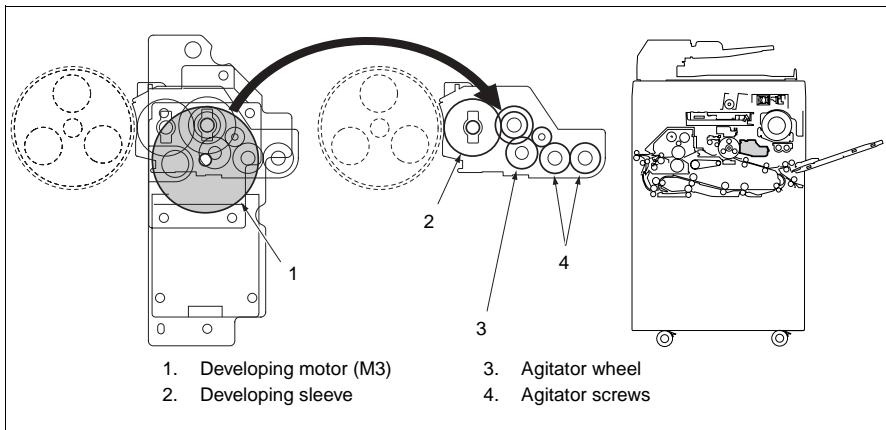
- 1. PCL
- 2. Charging corona section
- 3. RADF (EDH)
- 4. Image write section
- 5. Image read section
- 6. Toner supply section
- 7. Developing section
- 8. Second paper feed section
- 9. Bypass tray
- 10. Loop roller
- 11. Transfer corona section
- 12. TSL
- 13. Vertical conveyance section
- 14. ADU
- 15. Separation corona section
- 16. Paper conveyance section
- 17. Tray 3
- 18. Tray 2
- 19. Tray 1
- 20. Paper reverse exit section
- 21. Paper exit section
- 22. Fixing section
- 23. Cleaning section

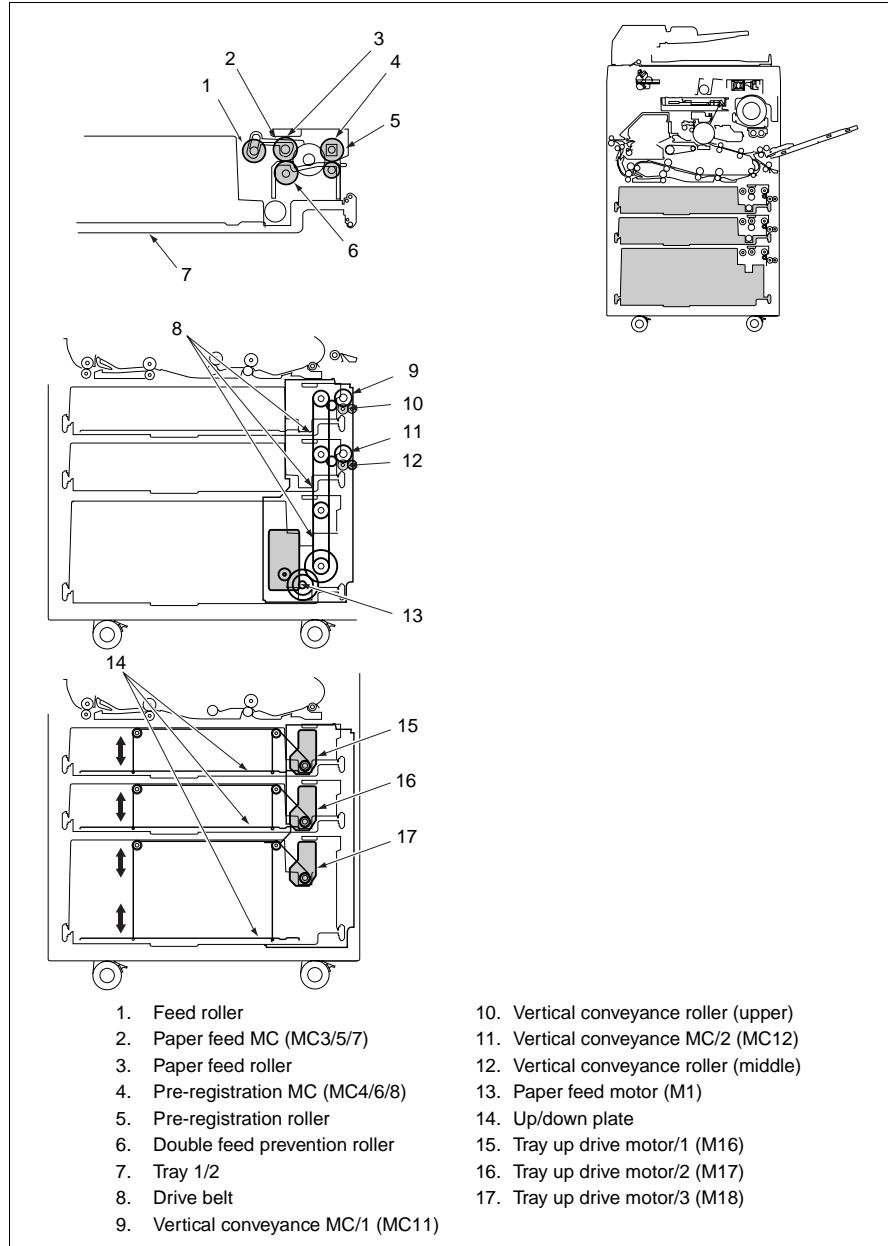
MAIN BODY

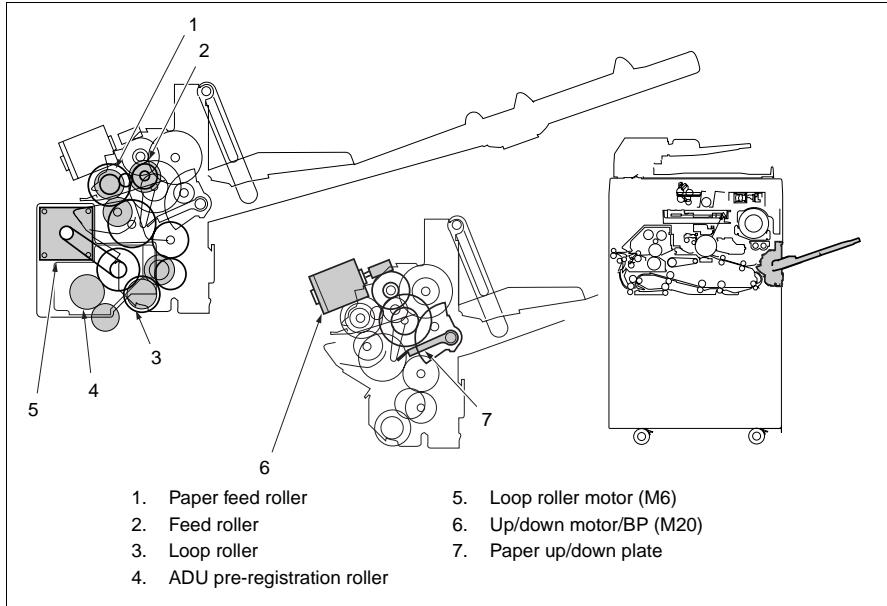
DRIVE SYSTEM DIAGRAM

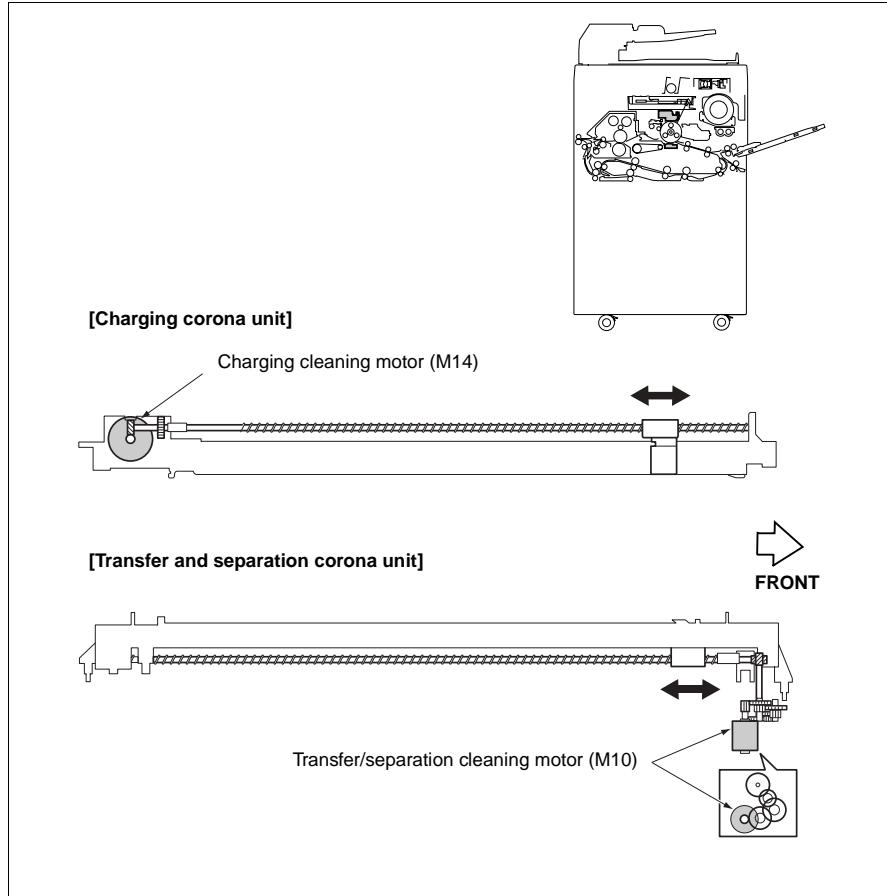
[1] Fixing/Web Drive Section

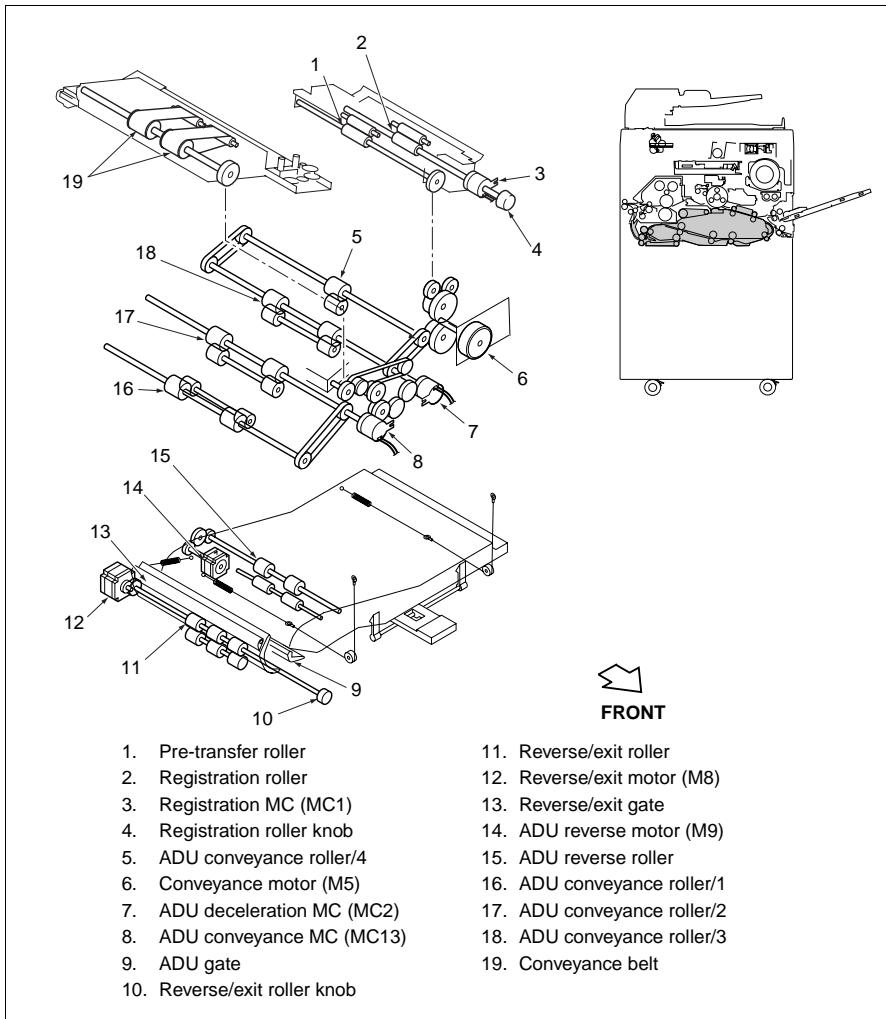


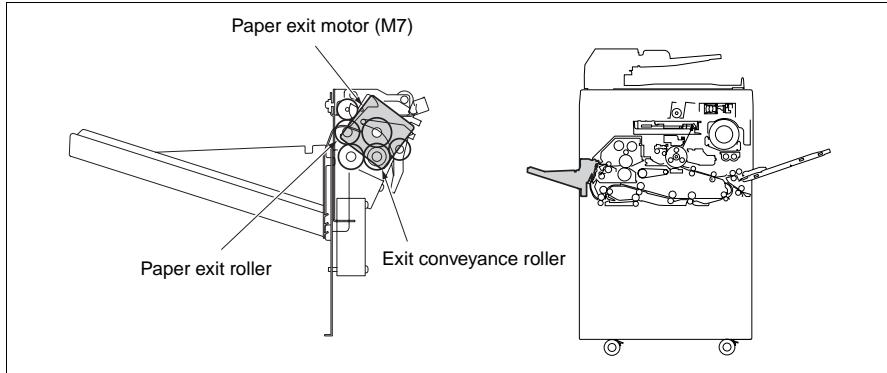
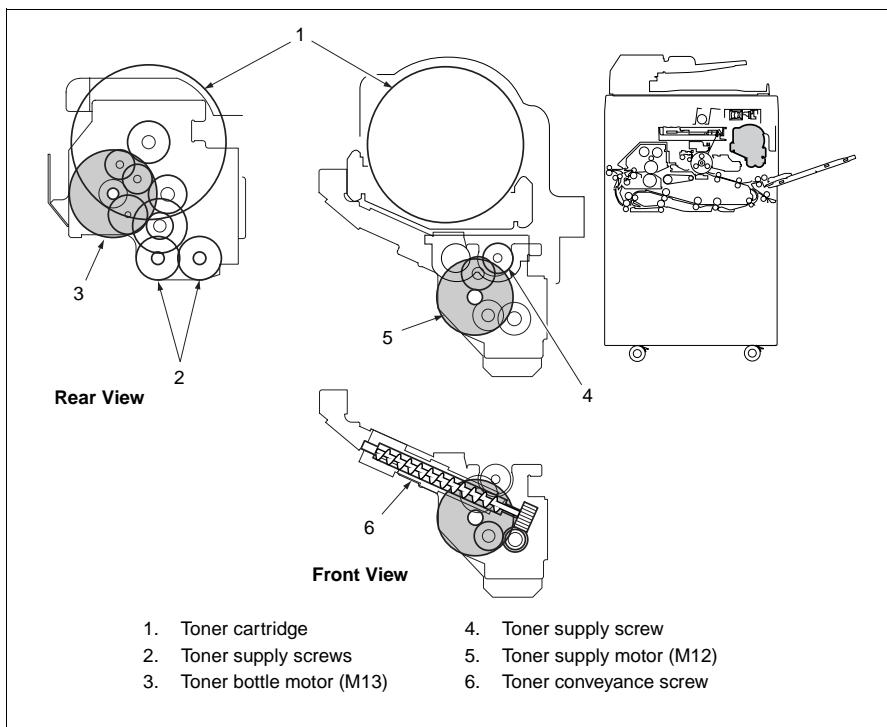
[2] Drum Drive Section**[3] Developing Drive Section**

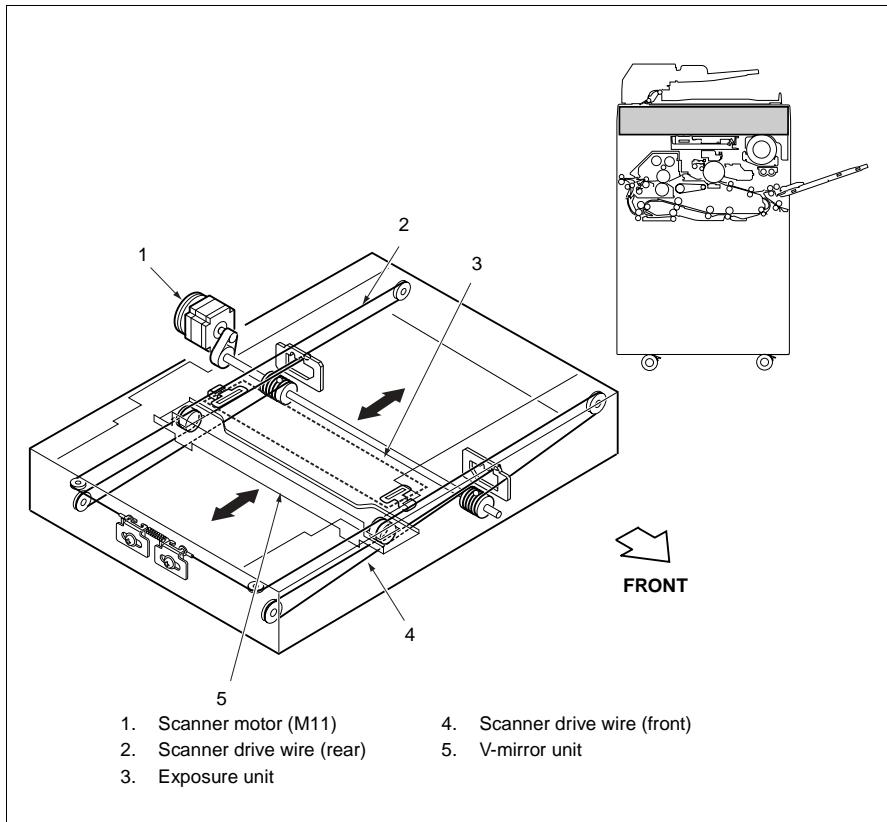
[4] Paper Feed/Vertical Conveyance/Tray Up Drive Sections

[5] Bypass Paper Feed /ADU Pre-registration Drive Section

[6] Charger and Transfer/Separation Wire Cleaning Drive Section

[7] ADU Conveyance Drive Section

[8] Paper Exit Drive Section**[9] Toner Supply Drive Section**

[10] Optics Drive Section

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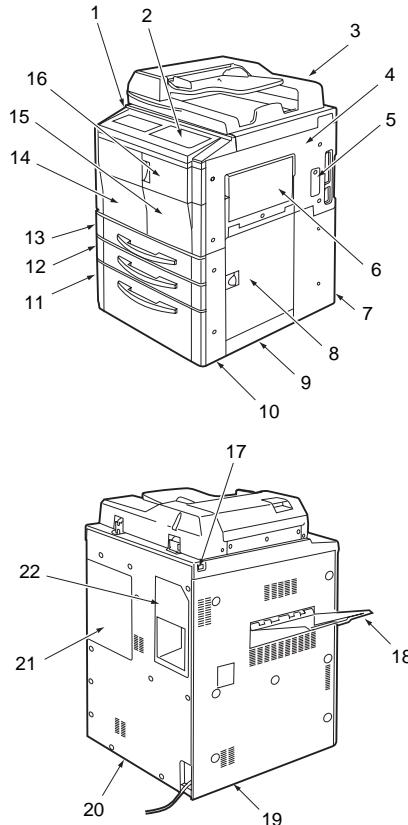


UNIT EXPLANATION

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EXTERNAL SECTION

[1] Composition

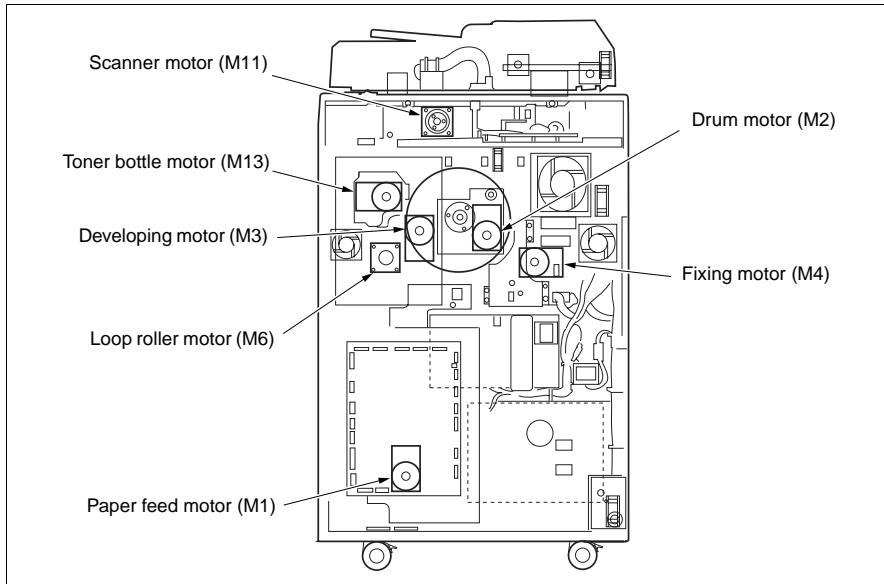


- | | |
|------------------------------------|-----------------------------|
| 1. Sub power switch (SW2) | 12. Tray 2 |
| 2. Operation panel | 13. Tray 1 |
| 3. RADF | 14. Front left door |
| 4. Right side cover (upper) | 15. Front right door |
| 5. Developing suction filter cover | 16. Toner access door |
| 6. Bypass tray | 17. Main power switch (SW1) |
| 7. Right side cover (lower rear) | 18. Paper exit tray |
| 8. Vertical conveyance door | 19. Left side cover |
| 9. Right side cover (lower middle) | 20. Rear cover |
| 10. Right side cover (lower front) | 21. Optional cover |
| 11. Tray 3 | 22. Ozone filter cover |

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DRIVE SECTION

[1] Composition



[2] Mechanisms

Mechanism	Driven Parts	Method
Drum drive*1	Drum, Toner guide roller, Toner conveyance screw, and Separation claw swing	Gear drive (dedicated motor)
Developing drive*1	Developing sleeve	Gear drive (dedicated motor)
Fixing drive*1	Fixing roller (upper)	Gear drive (dedicated motor)
Paper feed drive*1	Tray 1/2/3, Vertical conveyance roller (middle/lower)	Gear drive (dedicated motor) + Belt
By-pass/loop drive*1	By-pass feed roller and ADU pre-registration roller	Gear drive (dedicated motor) + Belt
Scanner drive*1	Exposure unit, V-mirror unit	Wire drive (dedicated motor) + Belt
Paper exit drive*1	Paper exit roller	Gear drive (dedicated motor)

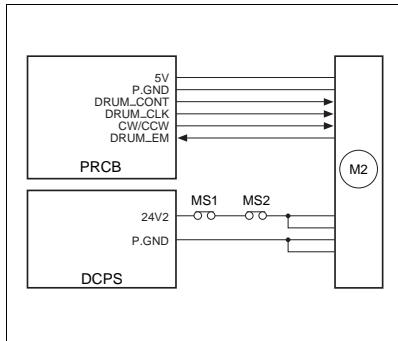
*1 Independent drive mechanisms

Drive mechanisms of this machine are driven by dedicated motors to ensure high-speed operation and to improve serviceability of the drum unit and developing performance.

Speeds of the drum motor (M2), fixing motor (M4), and loop roller motor (M6) are switched as shown below according to the paper type selected in the key operator mode, thus enhancing reliability of copying on thick paper.

Paper type	Motor speed	
Thick paper	185 mm/s	
Others	280 mm/s	55-cpm
	320 mm/s	65-cpm

[3] M2 (Drum) Control



M2 (drum) is controlled by PRCB (printer control board) and the motor drive power is supplied from DCPS (DC power supply unit).

1. Operation

M2 (drum) is a motor driven by 24 VDC. It drives the drum, toner guide roller, toner conveyance screw, and separation claw swing. The flywheel mechanism adopted for M2 ensures accurate and steady rotation.

M2 starts rotating when the START button is pressed and stops when the specified time lapses after completion of second paper feeding of the last copy.

When either one of the front-left and front-right doors of this machine opens, MS1 (interlock MS/R) or MS2 (interlock MS/L) actuates to stop supplying the DC power to the motor, causing M2 to stop.

2. Signals

a. Input signal

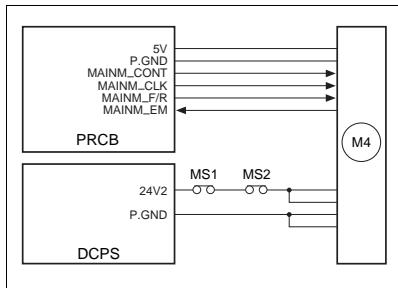
- (1) DRUM_EM (M2 to PRCB)
M2 (drum) rotation abnormality detection signal
[H]: Rotation error (when motor speed changes by 6.5 % more or less than the motor speed specified value)

[L]: Normal rotation

b. Output signals

- (1) DRUM_CONT (PRCB to M2)
M2 (drum) ON/OFF control signal
[L]: M2 ON
[H]: M2 OFF
- (2) CW/CCW (PRCB to M2)
M2 (drum) rotational direction switchover signal
[L]: CW rotation
[H]: CCW rotation
- (3) DRUM_CLK (PRCB to M2)
M2 (drum) rotational speed control clock signal

[4] M4 (Fixing) Control



M4 (fixing) is controlled by PRCB (printer control board) and the motor drive power is supplied from DCPS (DC power supply unit).

1. Operation

M4 (fixing) is a motor driven by 24 VDC. It drives the fixing roller.

M4 starts rotating when the START button is pressed and stops when the last copied paper has been ejected.

During the warm-up operation, M4 rotates to rotate the fixing roller.

2. Signals

a. Input signal

- (1) MAINM_EM (M4 to PRCB)

M4 (fixing) rotation error detection signal

[H]: Rotation error (when motor speed changes by 6.5% more or less than the motor speed specified value)
[L]: Normal rotation

b. Output signals

- (1) MAINM_CONT (PRCB to M4)

M4 (fixing) ON/OFF control signal

[L]: M4 ON

[H]: M4 OFF

- (2) MAINM_F/R (PRCB to M4)

M4 (fixing) rotational direction switchover signal

[L]: CW rotation

[H]: CCW rotation

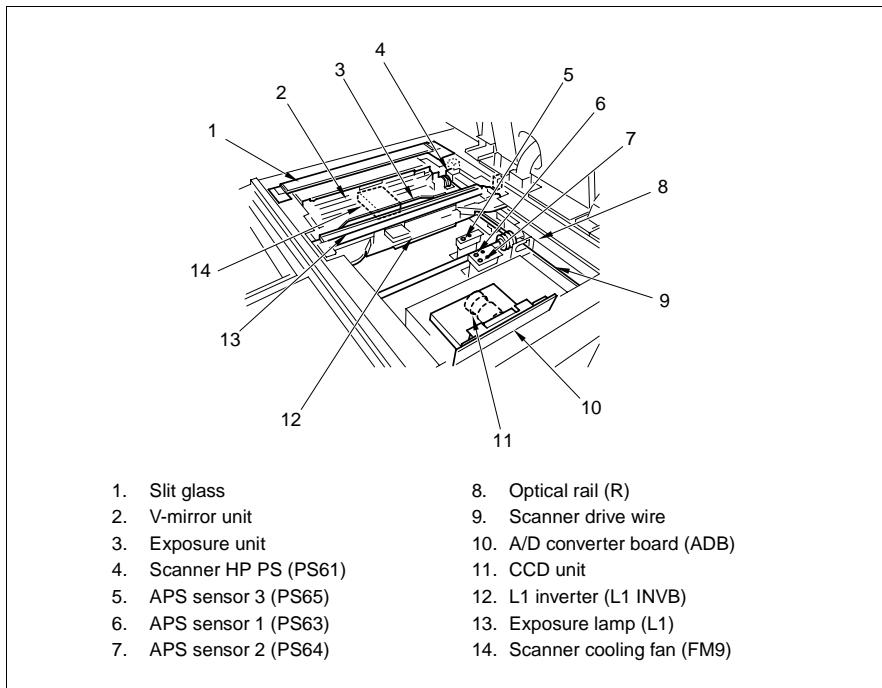
- (3) MAINM_EM (M4 to PRCB)

M4 (fixing) rotational speed control clock signal

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SCANNER SECTION

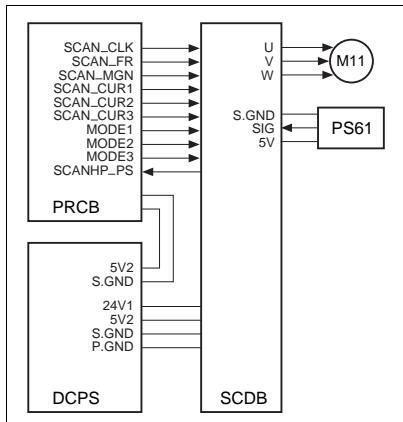
[1] Composition



[2] Mechanisms

Mechanism	Method
Light source	Xenon lamp
Exposure	Light source moving slit exposure, static exposure
Scanning	Platen original scanning: 1st, 2nd, and 3rd mirrors are shifted. RADF original scanning: Original is moved with light source held sta- tionary.
Lamp power supply	Lamp cord
Scanner cooling	Cooling fan

[3] M11 (Scanner) Control



M11 (scanner) is driven by SCDB (scanner drive board) and is controlled by PRCB (printer control board).

The related signal is PS61 (scanner HP).

1. Operation

a. Operation of M11 (scanner)

M11 (scanner) is a 3-phase stepping motor driven by the 3-phase bipolar constant-current drive method. The motor is turned ON/OFF by supplying/stopping clock pulses.

The rotational speed, direction, and amount of movement of M11 is determined by the increment of the driving step count. This count is reset each time PS61 (scanner HP) is turned ON or OFF by the exposure unit.

b. Movement speed of the exposure unit

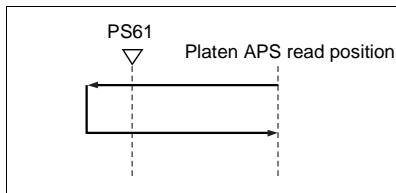
Scanning speed

Operation mode	Movement speed
Scan	320 mm/s (1:1)
Return	640 mm/s
Home position search	247 mm/s

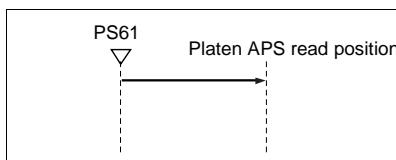
c. Exposure unit home position search

When SW2 (sub power switch) or the START button is pressed, M11 (scanner) searches for the home position of the exposure unit. However, this operation is performed in different ways depending on whether PS61 (scanner HP) is ON or OFF.

(1) When PS61 (scanner HP) is OFF



(2) When PS61 (scanner HP) is ON



d. Read with shading correction

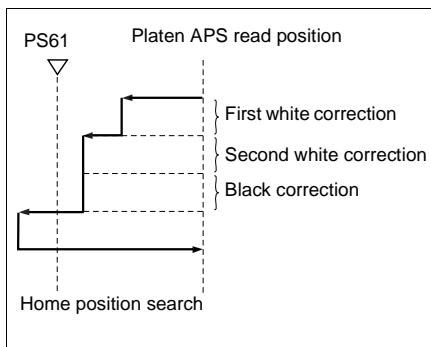
Shading correction is performed in different ways depending on whether SW2 (sub power) is ON or the START button is ON. When shading correction starts, the exposure unit is at the home position and PS61 (scanner HP) is OFF.

(1) When SW2 (sub power) is ON

L1 (exposure lamp) turns ON. Next, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 stops, thus reading the light reflected by the white reference plate installed underneath the glass stopper plate and performing the first white correction. Next, M11 moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 performs the second white correction.

Then, L1 is turned OFF for black correction, searching for the home position of the exposure unit.

In each of the first and second shading correction processes, the CCD 1 line data is read to compare brightness levels between pixels. The brighter data is used as white correction data.



(2) When the START button is ON

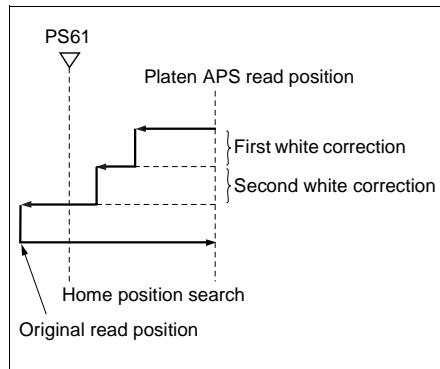
L1 (exposure lamp) turns ON. Next, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 (scanner) stops, thus reading the light reflected by the white reference plate installed underneath the glass stopper plate and performing the first white correction. Next, M11 moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 performs the second white correction.

Then, M11 proceeds to the ADF copy operation or platen copy operation.

e. ADF copy operation

After completion of the shading correction started by pressing the START button, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps from the position where PS61 (scanner HP) was turned ON, it stops. This position is the exposure position for ADF copy operation.

Then, ADF copy operation is performed. After completion of the ADF copy operation, L1 (exposure lamp) is turned OFF to start searching for the exposure unit home position.



SCANNER SECTION

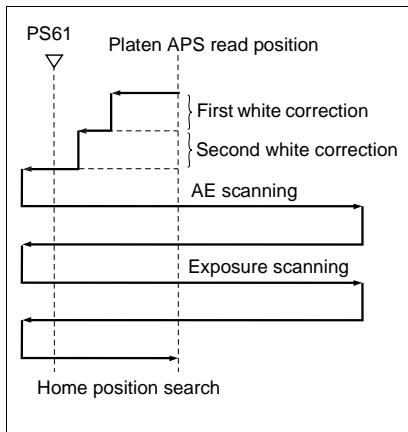
f. Platen copy operation

Platen copy operation is performed in different ways depending on whether AE control is performed.

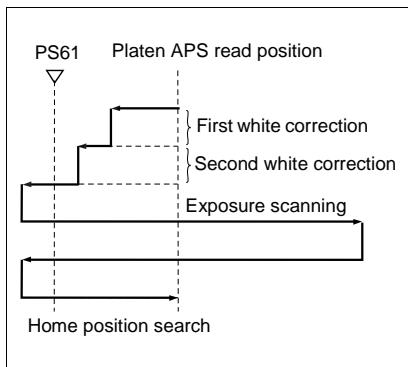
After completion of the shading correction started by pressing the START button, AE scanning is performed in the paper feed direction if the AE mode has been selected.

Then, exposure scanning is performed at the speed corresponding to the specified magnification by the distance corresponding to the original size, thus searching for the home position.

(1) Operation with AE



(2) Operation without AE



2. Signals

a. Input signals

- (1) SIG/SCANHP_PS (PS61 to SCDB to PRCB)

Scanner home position detection signal

The reference position of the home position of the exposure unit is detected.

[L]: The exposure unit is detected.

[H]: The exposure unit is not detected.

b. PRCB output signal

- (1) SCAN_CLK (PRCB to SCDB)

M11 (scanner) clock signal

- (2) SCAN_F/R (PRCB to SCDB)

M11 (scanner) rotational direction switchover signal

[L]: The exposure unit is moved toward the paper exit side.

[H]: The exposure unit is moved toward the paper feed side.

- (3) MODE1 to 3 (PRCB to SCDB)

M11 (scanner) energize switchover signals

- (4) SCAN_CUR1 to 3 (PRCB to SCDB)

M11 (scanner) energize current switchover signals

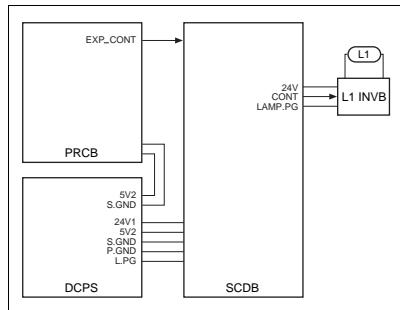
c. SCDB output signals

- (1) U, V, W (SCDB to M11)

M11 (scanner) drive control signals

These signals are used to control rotation of M11 (scanner). By supplying and stopping clock pulses, the motor is turned ON/OFF and the rotational direction is switched.

[4] Exposure control



L1 (exposure lamp) is driven by L1 INVb (L1 inverter) and is controlled by PRCB (printer control board) via SCDB (scanner drive board).

1. Operation

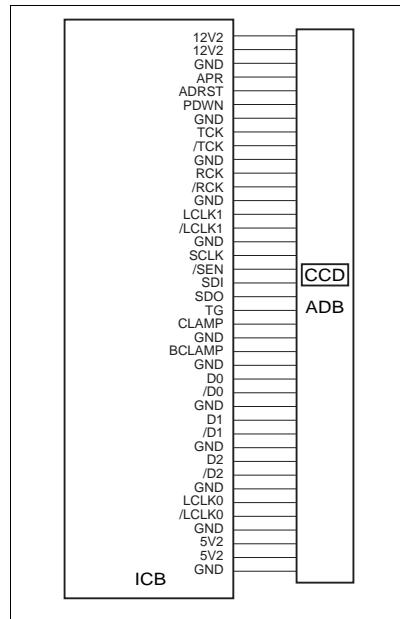
L1 (exposure lamp) is a xenon lamp driven by the inverter circuit. The xenon lamp can emit a constant light intensity and generates less heat than other lamps, so it does not require the light intensity control circuit that has been used in the existing machines, requiring no thermal protector circuit. However, since L1 is held lit when the exposure unit is stationary in the ADF mode, FM9 (scanner cooling) is installed in the read section.

2. Signals

a. Output signals

- (1) EXP_CONT (PRCB to SCDB)
L1 (exposure lamp) ON/OFF control signal
[L]: L1 ON
[H]: L1 OFF
- (2) CONT (SCDB to L1 INVb)
L1 (exposure lamp) ON/OFF control signal
[L]: L1 ON
[H]: L1 OFF

[5] Original Read Control



Original read control is performed by ADB (A/D converter board) and CCD sensor installed in ADB.

1. Operation

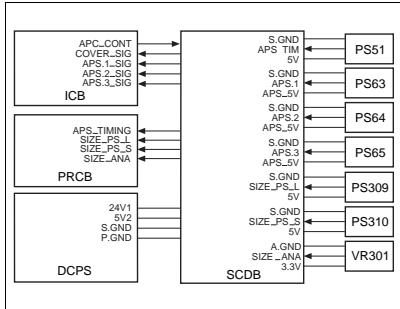
The light reflected by the exposed original is input to the CCD sensor through the lens. The analog voltage corresponding to the quantity of the input light is A/D-converted in the ADB (A/D converter board), being output to the ICB (image control board).

a. Original read

The original read timing is as follows:

- (1) Platen mode
After lapse of the specified interval since the exposure unit turned PS61 (scanner HP) OFF.
- (2) ADF mode
After lapse of the specified interval since the original's leading edge turned PS306 (original conveyance) ON.

[6] APS Control



The APS method used in the platen mode is different from that used in the ADF mode. The signal read by the APS sensor or RADF's original size detection sensor is processed by ICB (image control board) via SCDB (scanner drive board).

1. Operation

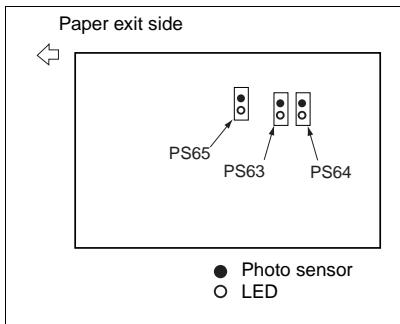
a. APS detection

(1) ADF mode

The paper size is detected according to the combination of ON/OFF states of PS309 (original size/2) and PS310 (original size/1) of the RADF's original feed tray and the resistance value of VR301 (original paper size).

(2) Platen mode

The paper size is detected according to the combination of ON/OFF states of PS63 (APS/1), PS64 (APS/2), and PS65 (APS/3) and the signal read by the CCD sensor. PS63 to PS65 are used to detect the original size in the sub-scanning direction and the CCD sensor is used to detect the original size in the main scanning direction.



Relationships between sensors and paper sizes are as follows:

Paper size \ Sensor	PS65	PS63	PS64
Min. size	○	○	○
B5R	●	○	○
B5	○	○	○
B4	●	●	●
A4R	●	●	○
A4	○	○	○
A3	●	●	●
8.5 x 11R	●	○	○
8.5 x 11	○	○	○
8.5 x 14	●	●	●
11x 17	●	●	●

● ON
○ OFF

b. APS detection timing

The APS detection timing differs between the platen mode and DF mode.

(1) ADF mode

When the RADF mode is selected or an original is set on the RADF original feed tray, APS detection takes place using PS309 (original size/2), PS310 (original size/1), and VR301 (original size).

(2) Platen mode

When the RADF is closed and PS51 (APS timing) turns ON, L1 (exposure lamp) turns ON and the CCD detects the reflected light to detect the original size in the main scanning direction. Since RADF is still open at this time, the black level of the sky shot (outside the original) and the white level of the original (inside the original) are detected according to whether an original is present. At this time, the original size in the sub-scanning direction is detected using PS63 to PS65 (APS/1 to APS/3). When the RADF is closed completely and PS311 (ADF open/close) turns ON, CCD reads the white level of the platen cover and the black level in the original. Among the two original sizes detected as discussed above, the larger size is determined as the original size in the main scanning direction.

2. Signals

a. Input signals

- (1) APS_TIM (PS51 to SCDB)
ADF open/close detection signal
[L]: ADF is closed.
[H]: ADF is open.
- (2) APS.1/APS.1_SIG (PS63 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (3) APS.2/APS.2_SIG (PS64 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (4) APS3/APS.3_SIG (PS65 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (5) SIZE_PS_L (PS309 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (6) SIZE_PS_S (PS310 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (7) SIZE_ANA (PS301 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (8) COVER_SIG (SCDB to ICB)
Same as APS TIM signal.
- (9) APS_TIMING (SCDB to PRCB)
Same as APS TIM signal.

b. Output signals

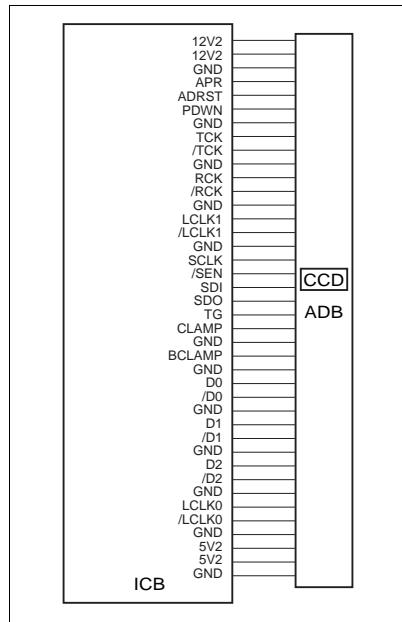
- (1) APS_CONT

This signal controls ON/OFF states of APS_5V power for driving PS63, PS64, and PS65 (APS1 to APS3).

[L]: APS_5 V OFF

[H]: APS_5 V ON

[7] AE Control



The CCD sensor detects the image density on an original during AE scanning to select the optimum copy gamma correction curve.

AE processing is controlled by the ICB (image control board).

1. Operation

a. AE detection

- (1) Platen mode

The image density on an original is measured during AE scanning preceding the exposure scanning that is carried out after depression of the START button.

<AE sampling area>

1) Normal copy

10 mm inside the perimeter of the original detected by APS.

2) Non-image area erasure mode

Entire original area detected during pre-scanning.

(2) ADF mode

The image at the leading edge of the original is read when the PRINT button is pressed.

The read data is used to measure the image density on the original.

<AE sampling area>

1) Main scanning direction

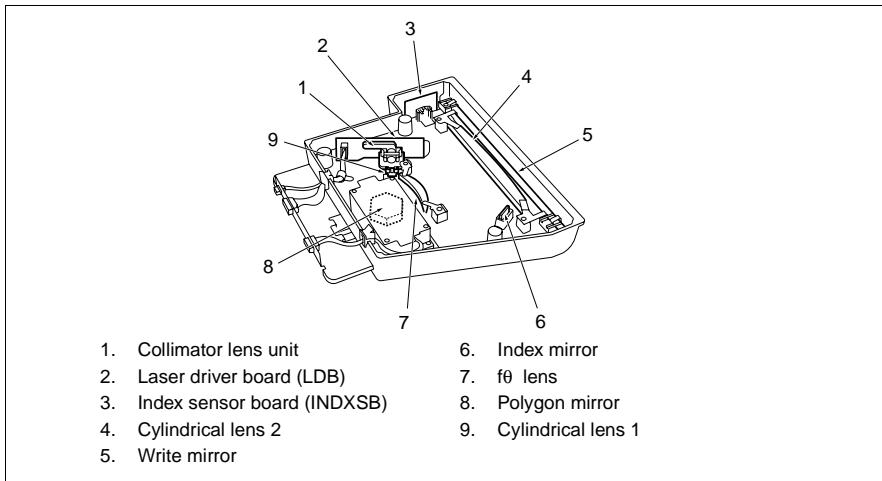
10 mm area inside the original detected by APS

2) Sub-scanning direction

2-to-4 mm area from the leading edge of the original.

WRITE UNIT

[1] Composition

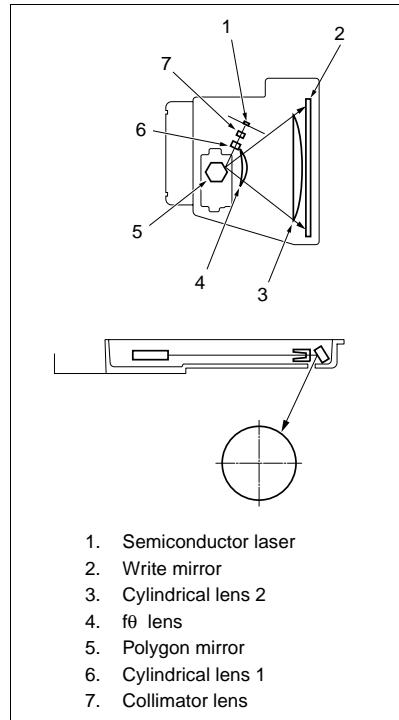


[2] Mechanisms

Mechanism	Method
Scan*1	Polygon mirror
Light source*2	1-chip, 2-beam laser diode (Power: 15 mW per beam)
Reference position*3	Index sensor

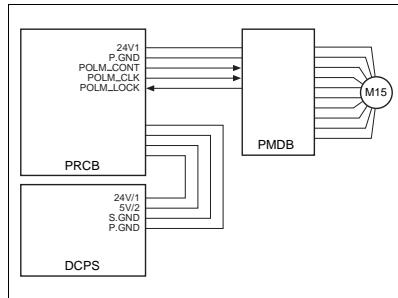
*1 Path of laser light

The light output from the semiconductor laser is radiated onto the OPC drum via the collimator lens, cylindrical lens 1, polygon mirror, fθ lens, cylindrical lens 2, and write mirror.



***2 Light source**

Conventionally, two parallel beams were generated from two laser beams. The laser diode adopted for this machine can generate two beams using a single chip, requiring neither fine-adjustment prism nor beam composition prism.

[3] M15 (Polygon) Control

M15 (polygon) is driven by PMDB (polygon drive board) and is controlled by PRCB (printer control board).

1. Operation**a. Explanation of operation**

M15 is a 3-phase brushless DC motor which is driven by the 3-phase bipolar method. The current flowing through the coil is switched according to the position of the rotor detected by the position sensor (magnetic sensor) in the motor. This motor rotates the polygon mirror to scan the laser beams from LDB (laser driver board) in the axial direction of the drum. Its rotation is held constant by PLL control.

b. Rotational speed

M15 is powered by 24 VDC and its rotational speed is as follows:

Rotational speed	Linear speed	55-cpm	65-cpm
37,795 rpm	320 mm/s	—	normal
33,070 rpm	280 mm/s	normal	—
21,850 rpm	185 mm/s	thick paper	—

2. Signals

a. Input signals

- (1) POLM_LOCK (PMDB to PRCB)

This signal indicates the clock synchronization state of M15 (polygon).

[L]: Synchronous (normal)

[H]: Asynchronous (abnormal)

b. Output signals

- (1) POLM_CONT (PRCB to PMDB)

This signal turns ON/OFF M15.

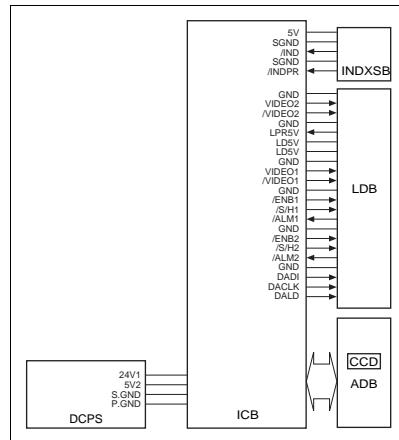
[L]: M15 ON

[H]: M15 OFF

- (2) POLM_CLK (PRCB to PMDB)

This is a reference clock signal for PLL-controlling M15 in PMDB.

[4] Image Write Control



The analog image data from the CCD sensor is A/D-converted by the ADB (A/D converter board), then sent to the ICB (image control board) for data processing. The processed image data is converted into a laser beam on the LDB (laser driver board), and then the beams are radiated onto the drum surface. Two beams are emitted per laser diode. Two lines of image data is written per scan.

The write start reference position is detected by the INDXSB (index sensor board). The ICB has an E-RDH (electronic RDH) function to store digitized image data. Various editing functions can be performed based on this data.

1. Operation

a. Image processing

The following processing is performed by the ICB (image control board):

(1) AOC (Automatic Offset Control)

The IC on the ADB (A/D converter board) automatically adjusts the analog offset voltage of the CCD sensor output so that it is at the lower limit of the A/D converter level.

(2) AGC (Automatic Gain Control)

During shading correction, the white reference plate is read to adjust the analog amplification factor of the CCD sensor output so that the read level is at the upper limit of the A/D converter level.

(3) Shading correction

<Timing>

- When SW2 (sub power) is ON
- At job start

(4) Brightness/density conversion

(5) AE processing

(6) Text/dot pattern judgment

(7) Filtering

(8) Magnification change processing

(9) Copy gamma correction

(10) Skew correction

(11) Error diffusion processing

(12) Data compression/expansion processing

(13) Write density control

b. Write

The ICB (image control board) sends image data on a pixel basis to LDB (laser driver board) according to the control signals from the PRCB (printer control board).

LDB causes the laser light to be emitted for a period corresponding to the image data. This laser light is radiated onto the drum surface.

(1) MPC (Maximum Power Control)

ICB (image control board) informs LDB (laser driver board) of the maximum output value and sets that value for the laser beam emission. LDB store this value and maintain the laser beam level using the APC (Auto Power Control).

<MPC timing>

When SW2 (sub power switch) is turned ON

(2) APC (Automatic Power Control)

After MPC is set, the ICB (image control board) outputs an APC start instruction to LDB (laser driver board) at the following timing:

<APC timing>

LDB (laser driver board) automatically monitors the laser drive current one line at a time, and controls it so that the light intensity remains the MPC value.

(3) Write timing

a) Main scanning direction

Using INDEX signal (/IND) from INDEXB (index sensor board), the laser write reference position is determined for each scan in the drum rotation direction, and the image is written onto the copy paper according to the copy paper position detected by PS70 (paper mis-centering).

b) sub scanning direction

Specified interval after PS44 (registration) detects the leading edge of the copy paper.

2. Signals

a. Input signals

(1) /IND (INDEXB to ICB)

This is an index signal used to detect deviation of main scanning.

(2) /INDPR (INDEXB to ICB)

This signal monitors the INDEXB (index sensor board) power supply.

[H]: Abnormal

[L]: Normal

(3) /ALM1 (LDB to ICB)

This signal indicates the state of the laser 1 drive current.

[H]: Normal

[L]: Abnormal

(4) LPR5V (LDB to ICB)

This signal monitors the LDB (laser driver board) power supply.

[H]: Normal

[L]: Abnormal

(5) /ALM2 (LDB to ICB)

This signal indicates the state of the laser 2 drive current.

[H]: Normal

[L]: Abnormal

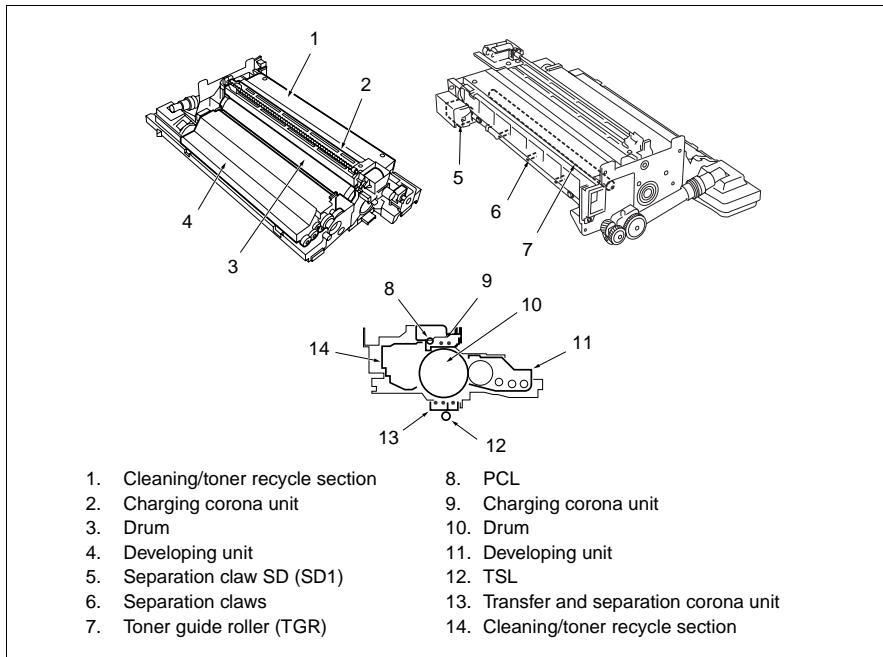
b. Output signals

- (1) /S/H1 (ICB to LDB)
APC sampling signal for one line (for laser 1)
- (2) /ENB1 (ICB to LDB)
Laser APC function ON/OFF control signal (for laser 1)
Laser beam emission stops when it is OFF.
- (3) /S/H2 (ICB to LDB)
APC sampling signal for one line (for laser 2)
- (4) /ENB2 (ICB to LDB)
Laser APC function ON/OFF control signal (for laser 2)
Laser beam emission stops when it is OFF.
- (5) VIDEO1/VIDEO1 (ICB to LDB)
Image signal for laser 1
- (6) VIDEO2/VIDEO2 (ICB to LDB)
Image signal for laser 2
- (7) DACLK (ICB to LDB)
LDB (laser driver board) MPC value data transmission clock signal
- (8) DADI (ICB to LDB)
LDB (laser driver board) signal for MPC
- (9) DALD (ICB to LDB)
LDB (laser driver board) MPC value memory command signal

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DRUM UNIT

[1] Composition



[2] Mechanisms

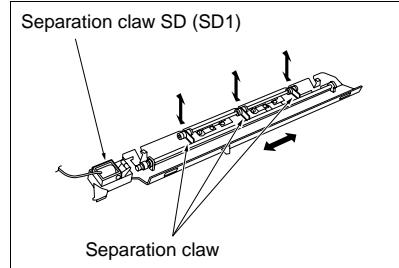
Mechanism	Method
PCL/TSL	LED
Auxiliary separation *1	Separation claws
Transport assistance *2	Ratchet wheel

The drum unit is an integral assembly consisting of a drum, charging corona unit, developing unit, cleaning/toner recycle unit, PCL, and separation claws.

*1 Auxiliary separation

- To prevent paper jamming, three separation claws are used to separate paper from the drum forcibly. These separation claws are pressed against the drum or detached from it by turning ON/OFF the separation claw solenoid (SD1).
- To prevent a specific part of image-copied paper from being stained and to prevent the drum from being scratched, the swing mechanism slides the separation claws about 8 mm

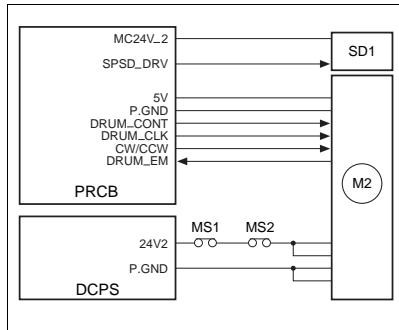
back and forth in parallel with the drum surface.



*2 Transport assistance

The thick paper conveyance ability has been improved by the use of ratchets.

[3] Separation Claw Control



Separation claws are driven by SD1 (separation claw). Separation claws are swung by M2 (drum). SD1 is controlled by PRCB (printer control board).

1. Operation

a. Separation claw ON/OFF control

SD1 (separation claw) is a pull-type solenoid powered by 24 VDC. It turns ON to press separation claws against the drum to help image-copied paper separate.

(1) SD1 (separation claw) operation timing

SD1 turns ON after a lapse of specified time from turning ON of PS43 (leading edge) of the second paper feed section. It turns OFF after a lapse of the time set by PRCB (printer control board).

b. Separation claw swing control

Separation claws are swung by M2 (drum) via the cam mechanism.

2. Signals

a. Output signal

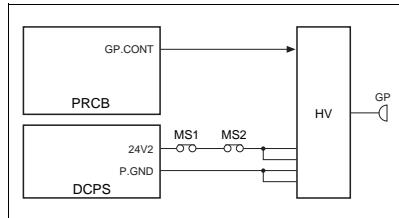
(1) SPSD_DRV (PRCB to DCDB)

SD1 (separation claw) drive control signal

[L]: SD1 ON

[H]: SD1 OFF

[4] Paper Guide Plate Control



To prevent toner from adhering to the paper guide plate, a constant voltage is applied to the paper guide plate. This voltage is supplied from HV (high voltage unit) and is controlled by PRCB (printer control board).

1. Operation

a. ON/OFF timing

Turning ON/OFF in sync with M2 (drum)

b. Applied voltage

-500 VDC

2. Signal

a. Output signal

(1) GP. CONT (PRCB to HV)

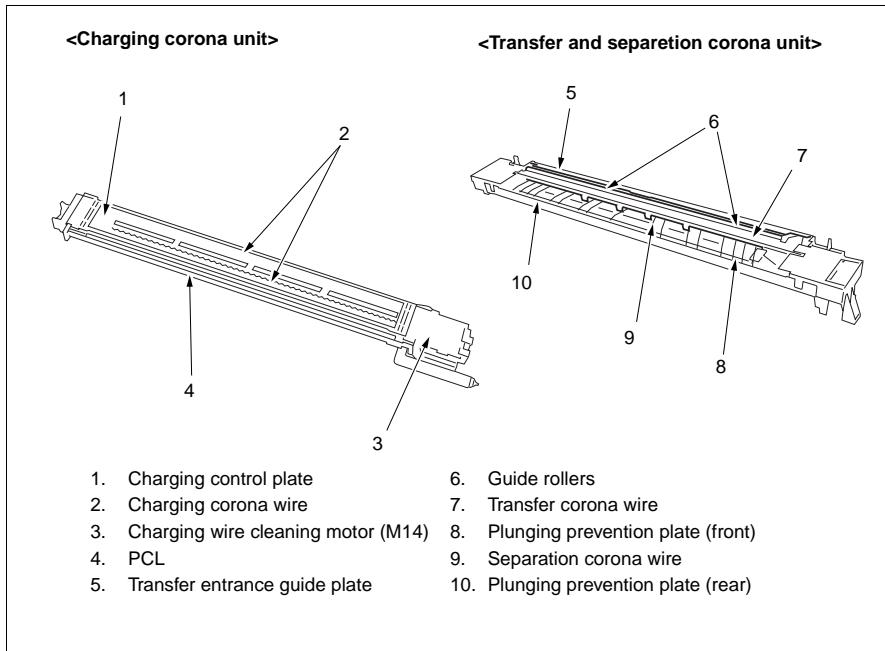
This signal controls turning ON/OFF the voltage application to the paper guide plate.

[L]: Voltage applied

[H]: Voltage not applied

CORONA UNIT SECTION

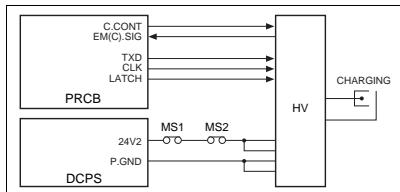
[1] Composition



[2] Mechanisms

Mechanism	Method
Charging	Scorotron (DC negative corona discharge) Discharging wire: Tungsten, 0.06 mm dia. (gold-plated skin path, with automatic wire cleaner) Grid control: Gold-plated stainless plate
Transfer	DC positive corona discharge Discharging wire: Oxide film tungsten, 0.06 mm dia., with automatic wire cleaner
Separation	AC/DC corona discharge Discharging wire: Oxide film tungsten, 0.06 mm dia., with automatic wire cleaner

CORONA UNIT SECTION

[3] Charging Control

The current output to the charging wire and the voltage applied to the grid are supplied from HV (high voltage unit) and they are controlled by PRCB (printer control board).

The levels of outputs to these are transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by HV, excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn ON/OFF only the charging wire output and the grid output at the same time.

1. Operation**a. Charging**

A Scrotron charging method is used. 24 VDC supplied from DCPS is raised to a negative DC voltage which is then discharged after being applied to the charging wire.

Charge output range: -600 μ A to -1200 μ A

b. Grid voltage

The grid voltage is output from HV to the charging plate.

Grid voltage output range: -500 V to -1000 V

2. Signals**a. Input signal**

(1) EM (C).SIG (HV to PRCB)

This signal indicates the leak or short state of the charging corona unit.

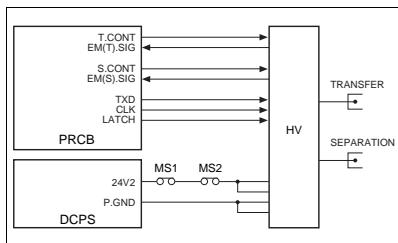
[L]: Normal

[H]: Abnormal

b. Output signals

- (1) C.CONT (PRCB to HV)
This signal turns ON/OFF the charging wire.
[L]: Charging voltage ON
[H]: Charging voltage OFF
- (2) TXD (PRCB to HV)
Output level of each high voltage electrode.
Serial data signal for control
- (3) CLK (PRCB to HV)
Clock signal for TXD
- (4) LATCH (PRCB to HV)
Latch signal for TXD

[4] Transfer/Separation Control



The voltages applied to the transfer wire and separation wire is supplied from HV (high voltage unit) and are controlled by PRCB (printer control board). The levels of outputs to these wires are transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by HV, excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn ON/OFF only the transfer wire or separation wire.

1. Operation

a. Transfer

Positive DC high voltage is used for transfer.
Transfer DC output range: 50 µA to 600 µA

b. Separation

AC high voltage and negative DC voltage are used for separation.
Separation AC output range: 4kV to 5.7kV
Separation DC output range: 0 µA to -400 µA

2. Signals

a. Input signals

(1) EM (T) .SIG (HV to PRCB)

This signal indicates the leak or short state of the transfer corona unit.
[L]: Normal
[H]: Abnormal

(2) EM (S) .SIG (HV to PRCB)

This signal indicates the leak or short state of the separation corona unit.
[L]: Normal
[H]: Abnormal

b. PRCB output signals

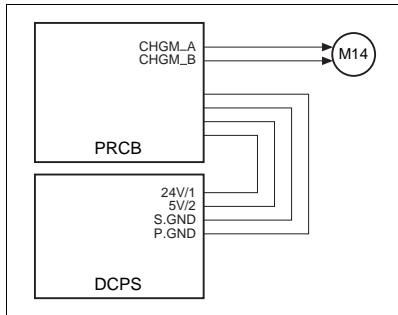
(1) T.CONT (PRCB to HV)

This signal turns ON/OFF the voltage applied to the transfer wire.
[L]: Transfer voltage ON
[H]: Transfer voltage OFF

(2) S.CONT (PRCB to HV)

This signal turns ON/OFF the voltage applied to the separation wire.
[L]: Separation voltage ON
[H]: Separation voltage OFF

[5] M14 (Charger Cleaning) Control



M14 (charger cleaning) is a DC motor powered by 24 VDC and is controlled by PRCB (printer control board).

1. Operation

a. Purpose of driving

M14 (charger cleaning) is used to drive the charging wire cleaning unit.

b. Operation timing

The charging wires are cleaned when SW2 (sub power) is turned ON and when the fixing temperature is lower than 50°C. They are also cleaned after the specified copy count is reached.

* Changeable with the 25-mode DIP SW

c. Cleaning operation

Normally, the charging wire cleaning unit is on the front side of the machine. It moves back and forth to clean the charging wires. The movement direction is changed by changing the rotational direction of M14 (charge cleaning).

The rotational direction of M14 and the position of the cleaner are detected by monitoring the current value of M14 with PRCB (printer control board).

2. Signals

a. Output signal

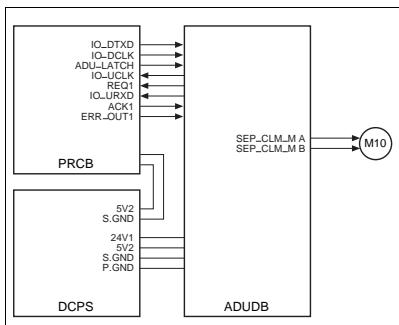
(1) CHGM_A, B (PRCB to M14)

M14 (charger cleaning) drive control signal.

The drive direction of M14 is controlled by switching between the drive current directions of two signals.

Status	CHGM_A	CHGM_B
Forward stroke of cleaning	H	L
Backward stroke of cleaning	L	H
Stop	L	L

[6] M10 (Transfer/Separation Cleaning) Control



M10 (transfer/separation cleaning) is a DC motor powered by 24 VDC and is controlled by PRCB (printer control board) via ADUDB (ADU drive board). Between PRCB and ADUDB, signals are exchanged using serial data.

1. Operation

a. Purpose of driving

M10 (transfer/separation cleaning) used to drive the transfer/separation wire cleaning pads.

b. Operation timing

The transfer/separation wires are cleaned when SW2 (sub power) is turned ON or when the fixing temperature is lower than 50°C.

It is also carried out after the specified copy count is reached.

* Changeable with the 25-mode DIP SW

c. Cleaning operation

Normally, the transfer/separation wire cleaning pads are on the front side of the machine. They move back and forth to clean the transfer and separation wires. The movement direction is changed by changing the rotational direction of M10 (transfer/separation cleaning).

The rotational direction of M10 and the position of the cleaner are detected by monitoring the current value of M10 with PRCB (printer control board).

2. Signals

a. Input signals

(1) IO_URXD (ADUDB to PRCB)
Serial data used to report the ADUDB (ADU drive board) operation state to PRCB (printer control board)

(2) REQ1 (ADUDB to PRCB)

This signal indicates that sending data from ADUDB (ADU drive board) to PRCB (printer control board) is requested.
When ADUDB receives ACK1 and can send data, this signal stands at the [L] level.

(3) IO_UCLK (ADUDB to PRCB)

Clock signal for IO_URXD signal
Clock signal for IO_URXD signal

b. Output signals

(1) SEP_CLM_M A, B (ADUDB to M10)

M10 (transfer/separation cleaning) drive control signal
The drive direction of M10 (transfer/separation cleaning) drive control signal
The drive direction of M10 is controlled by switching between the drive current directions of two signals.

Status	SEP_CLM_MA	SEP_CLM_MB
Forward stroke of cleaning	H	L
Backward stroke of cleaning	L	H
Stop	L	L

(2) IO_DTXD (PRCB to ADUDB)

Serial data used to report the machine operation state understood by PRCB (printer control board) to ADUDB (ADU drive board)

(3) IO_DCLK (PRCB to ADUDB)

Clock signal for IO_DTXD signal

(4) ADU_LATCH (PRCB to ADUDB)

Latch signal for IO_DTXD signal

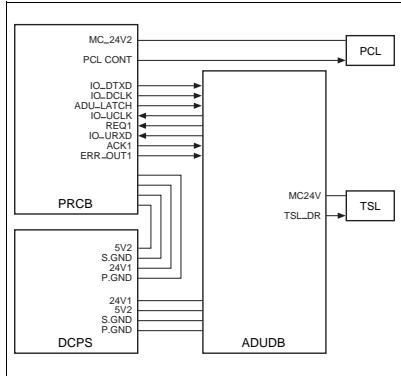
(5) ACK1 (PRCB to ADUDB)

Reception acknowledgment signal. It is sent each time PRCB (printer control board) receives one-byte data from ADUDB (ADU drive board). When PRCB receives REQ1 and can receive data, this signal stands at the [L] level.

(6) ERR_OUT1 (PRCB to ADUDB)

This signal requires resending of data when PRCB (printer control board) has failed in data reception from ADUDB (ADU drive board) due to an error.

[7] PCL/TSL Control



LEDs are used for PCL (pre-charging exposure lamp) and TSL (transfer synchronization lamp). PCL is driven by the PRCB (printer control board). TSL is driven by ADUDB (ADU drive board). PCL and TSL are controlled by PRCB .

1. Operation

PCL turns ON when the START button is pressed. It is turned OFF after a lapse of the specified time from turning ON of PS37 (paper exit). TSL turns ON after a lapse of the specified time from turning ON of PS43 (leading edge) of the second paper feed section. It turns OFF after a lapse of the specified time from detection of the trailing edge of copy paper.

2. Signals

a. Output signals

- (1) PCL CONT (PRCB to PCL)

PCL ON/OFF control signal

[L]: PCL ON

[H]: PCL OFF

- (2) TSL_DR (ADUDB to TSL)

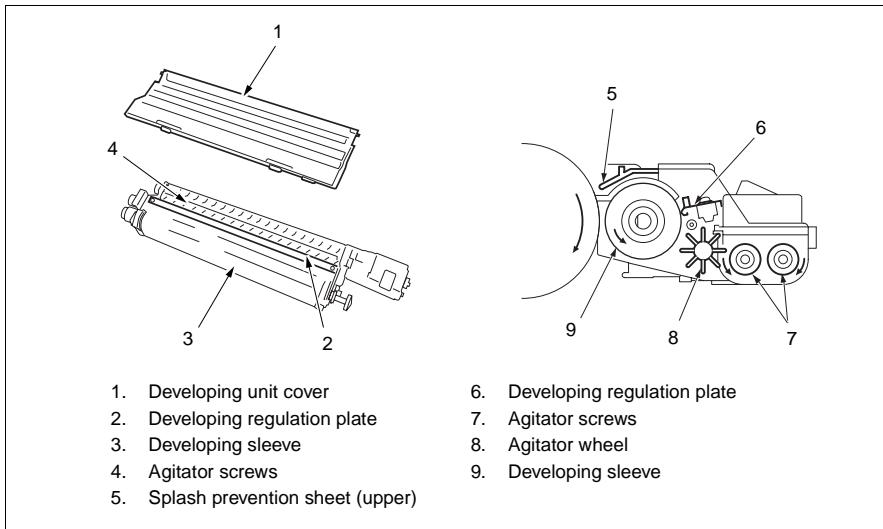
TSL ON/OFF control signal

[L]: TSL ON

[H]: TSL OFF

DEVELOPING UNIT

[1] Composition



[2] Mechanisms

Mechanism	Method
Developing	2-component developer
Developing bias	DC bias
Developer agitation	Main agitator Auxiliary agitator

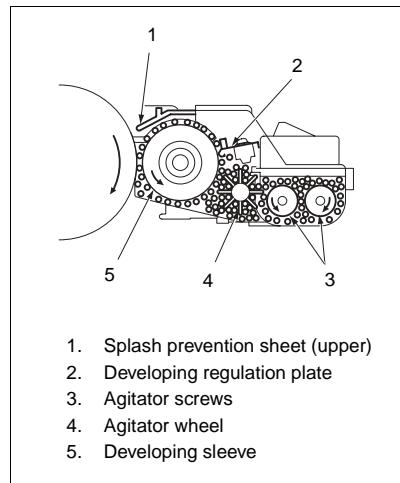
1. Developing drive

The developing motor (M3) drives the following parts via the gear unit at the back:

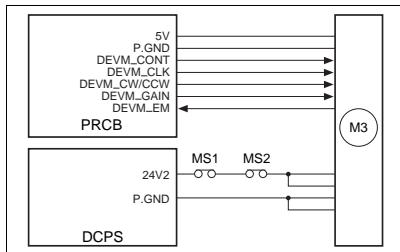
- Developing sleeve
- Agitator wheel
- Agitator screws

2. Flow of developer

The developer inside the developing unit is supplied to the developing sleeve by the agitator wheel, and maintained at a constant thickness by the developer regulation plate (bristle height regulation plate). The developer remaining on the developing sleeve is returned to the agitator screws.



DEVELOPING UNIT

[3] M3 (Developing) Control

M3 (developing) is controlled by PRCB (printer control board) and the motor drive power is supplied from DCPS (DC power supply unit).

1. Operation

M3 (developing) is a DC motor driven by 24 V. It drives the developing sleeve, agitator wheel, and agitator screws.

M3 turns ON when the PRINT button is pressed, and turns OFF after lapse of the specified time from turning OFF of the charging.

2. Signals**a. Input signals**

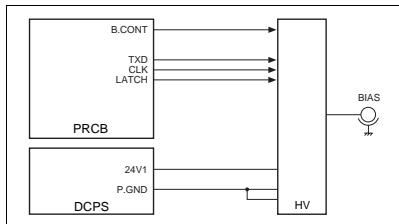
- (1) DEVM_EM (M3 to PRCB)
M3 (developing) abnormality detection signal
[H] Abnormal rotation (when motor speed changes by 6.5% more or less than the motor speed specified value)

[L] Normal rotation

b. Output signals

- (1) DEVM_CONT (PRCB to M3)
M3 (developing) drive control signal
[L] M3 ON
[H] M3 OFF
- (2) DEVM_CLK (PRCB to M3)
M3 (developing) rotational speed control clock signal
- (3) DEVM_CW/CCW (PRCB to M3)
M3 (developing) rotational direction indication signal
[H]: CW direction rotation
[L]: CCW direction rotation
- (4) EDVM_GAIN (PRCB to M3)
M3 (developing) rotational speed range indication signal
[H]: High speed range
[L]: Low speed range

[4] Developing Bias Control



The developing bias voltage is supplied from HV (high voltage unit) and is controlled by PRCB (printer control board). The output level of the developing bias voltage is transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by HV, excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn ON/OFF only the developing bias.

1. Operation

Application of the developing bias voltage starts after a lapse of the specified time from turning ON of the START button, and stops after a lapse of the specified time from turning OFF of PS43 (leading edge) by the last copy paper.

Developing bias output range: -300 V to -700 V

2. Signals

a. Output signal

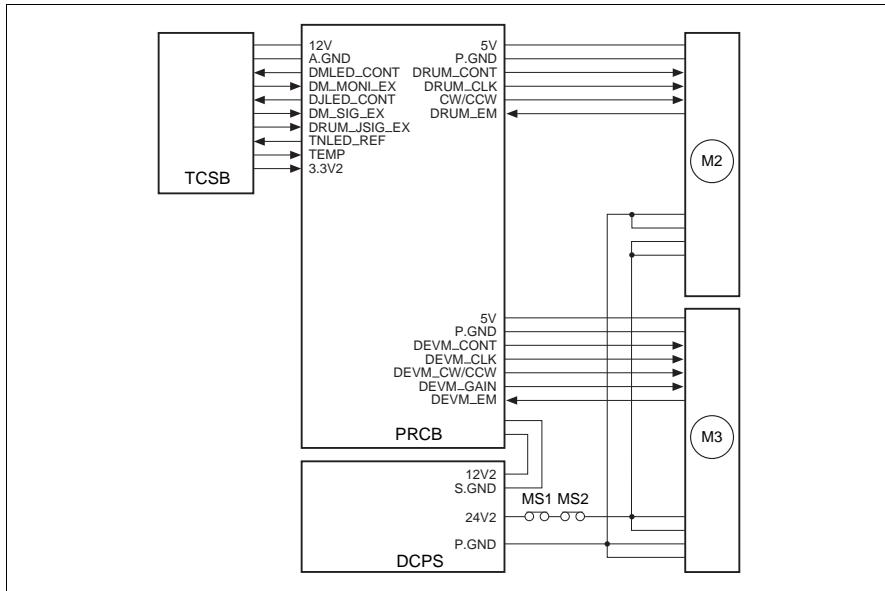
- (1) B.CONT (PRCB to HV)

Developing bias output ON/OFF control signal.

[L]: Developing bias ON

[H]: Developoing bias OFF

[5] Dmax Control



Dmax control is performed by TCSB (toner control sensor board), M2 (drum), M3 (developing), and so on under the control of PRCB (printer control board).

1. Operation

The purpose of Dmax control is to adjust the maximum density to the reference level for each machine.

a. Dmax control

(1) Method

Several latent images are created at the maximum laser power, images are developed with the rotational speed of the developing sleeve varied, then each density is read by the Dmax sensor (PD1) on TCSB (toner control sensor board).

The developing sleeve speed detected when the density has reached the reference level is recorded as the optimum sleeve speed, allowing developing to be performed at this sleeve speed.

(2) Timing

- a) When the fixing temperature is lower than 50°C at SW2 (sub power) ON
- b) Every 10,000 prints, upon completion of the last job.

2. Signals

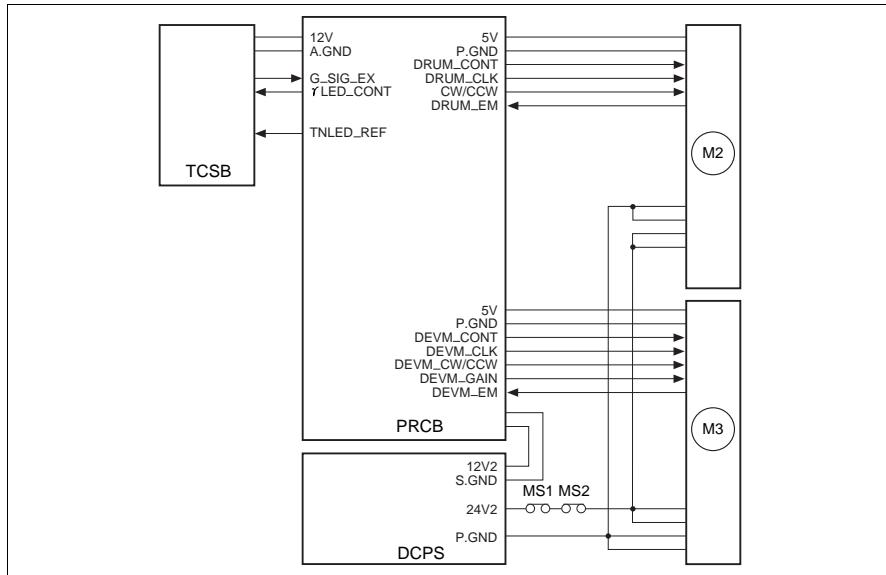
a. Input signals

- (1) DM_SIG_EX (TCSB to PRCB)
Output voltage of Dmax detection sensor (PC1)
on TCSB (toner control sensor board)
Reference voltage: 2.5 V
- (2) DM_MONI_EX (TCSB to PRCB)
This signal monitors the light reflected by the
drum surface (without toner).
The voltage applied to the Dmax detection LED
is corrected by TNLED_REF so that the output
voltage becomes 1.9 V (calibration).
Reference voltage: 1.9 V
<Timing>
Before Dmax correction
- (3) DRUM_JSIG_EX (TCSB to PRCB)
This signal detects a jam caused by paper wrap-
ping around the drum. A jam is detected when
the voltage becomes 4.0 V or more.
- (4) TEMP, 3.3V2 (TCSB to PRCB)
Drum temperature detection signal

b. Output signals

- (1) DMLED_CONT (PRCB to TCSB)
Dmax LED ON/OFF control signal
[L]: LED ON
[H]: LED OFF
- (2) TNLED_REF (PRCB to TCSB)
Power supply line for PD1 LED on TCSB.
The voltage is adjusted so that the Dmax MONI
signal becomes 1.9 V.
- (3) DJLED_CONT (PRCB to TCSB)
JAM LED ON/OFF control signal
[L]: LED ON
[H]: LED OFF

[6] Gradation Correction Control



Gradation correction control is performed by TCSB (toner control sensor board), M2 (drum), M3 (developing), and so on under the control of PRCB (printer control board).

1. Operation

The gradation characteristics of the toner density versus exposure amount at the image forming section (drum area) are detected to obtain a linear relation between the image density on a document and the copying image density.

(1) Method

Exposure is performed with the laser PWM varied in several steps, and development is performed at the sleeve speed obtained by Dmax correction.

Next, each density is read by the γ sensor (PD2) on TCSB (toner control sensor board) to detect the gradation characteristics of image density.

The gradation characteristics obtained here are used as the values for correcting the laser exposure amount.

Gradation correction control must be performed in two ways: 1-dot PWM (for normal mode) and 2-dot PWM (for photo mode).

(2) Timing

- When the fixing temperature is lower than 50°C at SW2 (sub power) ON
- Every 5,000 prints, upon completion of the last job.

2. Signals

a. Input signals

(1) G_SIG_EX (TCSB to PRCB)

This signal monitors the output voltage from the γ sensor (PD2) on the TCSB (toner control sensor board) as well as the light reflected by the drum surface (without toner).

The voltage applied to the gradation detection LED is corrected by TNLED_REF so that the output voltage becomes 3.0 V (calibration).

Reference voltage: 3.0 V

<Timing>

Before gradation correction.

b. Output signal

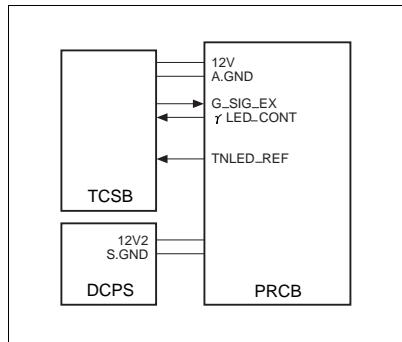
(1) YLED_CONT (PRCB to TCSB)

Gradation detection LED ON/OFF control signal

[L]: LED ON

[H]: LED OFF

[7] Dot Diameter Correction Control



Dot diameter is detected by TCSB (toner control sensor board) and is controlled by PRCB (printer control board).

1. Operation

Dot diameter correction is performed to prevent the 1-dot laser beam diameter from fluctuating due to the change in developing characteristics (caused by deteriorated developer) and soil in the write unit.

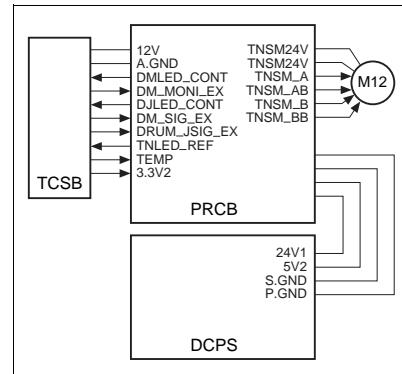
(1) Method

Multiple dot pattern patches with the same condensation are created to be read by the γ sensor (PD2). The laser power where the γ sensor output reaches the reference voltage is used as the MPC value.

(2) Timing

a) Every 10,000 prints, upon completion of the last job.

[8] Toner Density Control



The density of toner is controlled by controlling M12 (toner supply) from PRCB (printer control board).

1. Operation

a. Toner density detection

The reference patch density is detected using the patch detection method of TCSB (toner control sensor board) and the corresponding analog voltage signal is output to PRCB (printer control board), thus detecting the toner density.

The PRCB compares the detected voltage with the reference value to determine whether toner must be added.

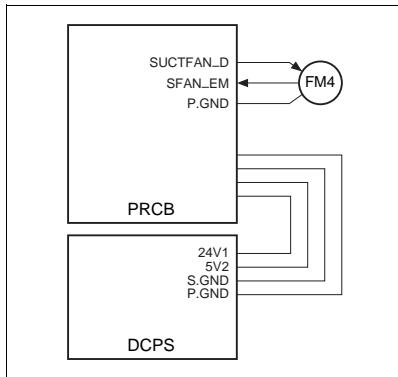
b. Toner supply operation

Upon read of the patch, M12 (toner supply) is turned ON to supply toner. The time needed to add toner depends on the paper size.

2. Signals

a. Output signals

- (1) TNSM_A, AB (PRCB to M12)
A-phase drive signal of M12 (toner supply)
- (2) TNSM_B, BB (PRCB to M12)
B-phase drive signal of M12 (toner supply)

[9] FM4 (Developing Suction) Control

FM4 (developing suction) is controlled by PRCB (printer control board).

1. Operation**a. ON timing**

FM4 (developing suction) is turned ON when M2 (drum) is turned ON.

b. OFF timing

FM4 (developing suction) is turned OFF after a lapse of the specified time from turning OFF of M2 (drum).

2. Signals**a. Input signal**

(1) FM2 EM (FM4 to PRCB)

FM4 (developing suction) abnormality detection signal

[L]: FM4 is normal.

[H]: FM4 is abnormal.

b. Output signal

(1) SUCTFAN_D (ACDB to FM4)

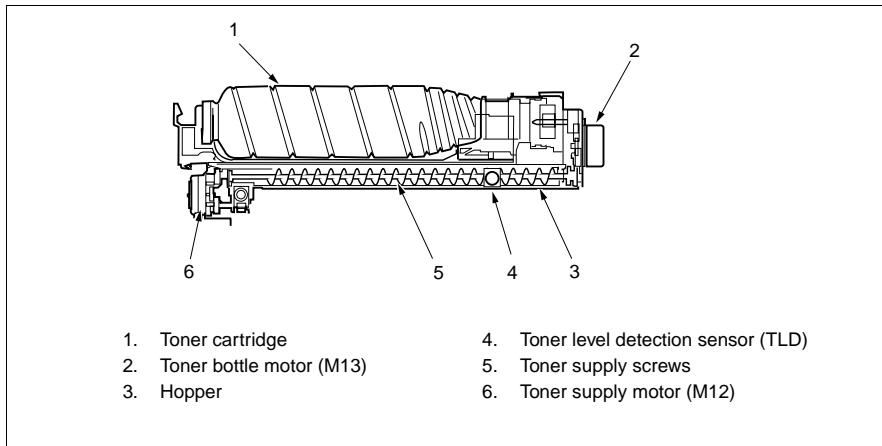
FM4 (developing suction) drive signal

[L]: FM4 OFF

[H]: FM4 ON

TONER SUPPLY UNIT

[1] Composition



[2] Mechanisms

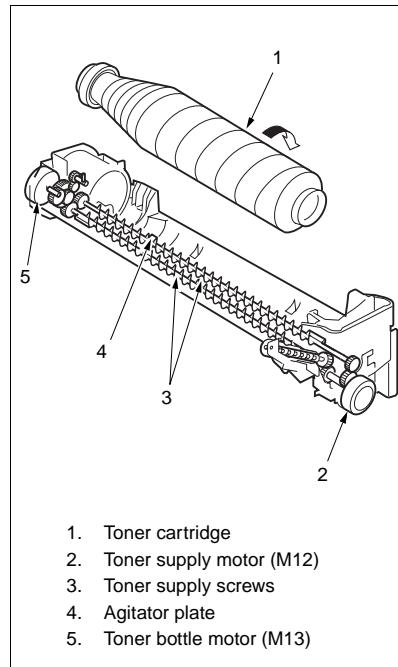
Mechanism	Method
Toner supply	Supply by screw
Toner level detection	Piezoelectric method 100 ± 25 g
Toner agitation*1	Agitator plate
Toner cartridge*2	Rotary cartridge Capacity: 1040 g
Toner leakage prevention	Toner supply shutter

*1 Toner agitation

Toner agitator plates are driven by the following two motors through the gear unit:

- Toner supply motor (M12): Drives the toner supply screws.
- Toner bottle motor (M13): Drives the toner cartridge.

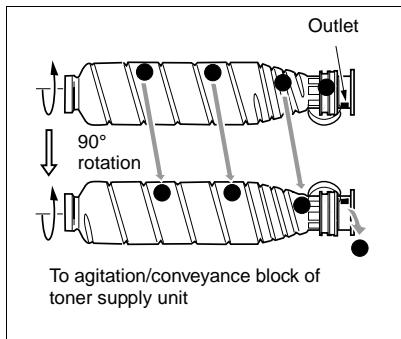
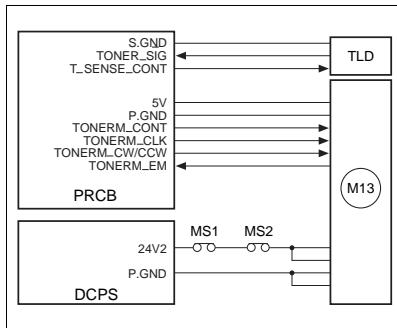
The agitator plates prevent toner from solidifying and collecting on the toner level detection sensor (TLD).



TONER SUPPLY UNIT

***2 Toner cartridge**

When the toner cartridge rotates, toner is fed to the outlet of the cartridge through the spiral groove on the surface of the toner cartridge. When the outlet of the cartridge faces downward, toner flows out of the outlet into the agitation/conveyance section of the toner supply unit.

**[3] Toner Level Detection Control**

Toner level detection is controlled by the TLD (toner level detection sensor) and the PRCB (printer control board).

1. Operation**a. Toner level detection**

A piezoelectric device is used as the TLD (toner level detection sensor).

When the level of toner in the hopper becomes low, the toner supply signal is output to PRCB (printer control board). As a result, a message is displayed on the LCD connected to OB1 (operation board/1).

b. Detection timing

The detection timing is as follows:

- Power-on
- When the front door opens or closes
- During copying

c. Toner supply to toner supply unit

When the no toner state is detected by TLD (toner level detection sensor), M13 (toner bottle) is turned ON to supply toner from the toner cartridge to the toner supply unit.

d. Detection of no toner state in toner cartridge

If the no toner state is detected by TLD (toner level detection) after M13 has been held ON for a specified period of time, the toner cartridge is assumed to be empty.

2. Signals

a. Input signals

- (1) TONER_SIG (TLD to PRCB)

When the level of toner in the toner supply unit becomes low, this signal goes low ([L]), displaying a message on the LCD connected to OB1 (operation board/1).

- (2) TONERM_EM (M13 to PRCB)

M13 (toner bottle) abnormality detection signal
[L]: M13 is normal.
[H]: M13 is abnormal.

b. Output signals

- (1) T_SENSE_CONT (PRCB to TLD)

TLD (toner level detection sensor) power control signal

The TLD is powered only when it is detecting the toner level.

- (2) TONERM_CONT (PRCB to M13)

M13 (toner bottle) control signal

[L]: M13 ON

[H]: M13 OFF

- (3) TONERM_CLK (PRCB to M13)

M13 (toner bottle) rotation speed control clock signal

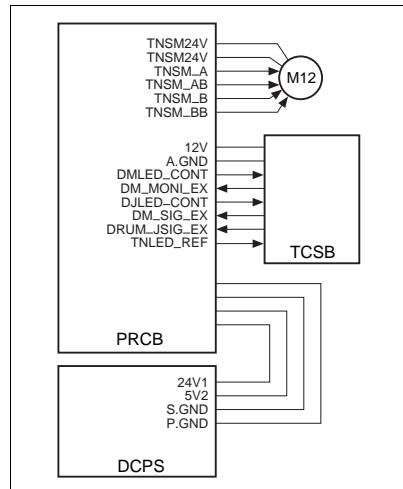
- (4) TONERM_CW/CCW (PRCB to M13)

M13 (toner bottle) rotational direction indication signal

[H]: CW direction rotation

[L]: CCW direction rotation

[4] M12 (Toner Supply) Control



M12 (toner supply) is controlled by the PRCB (printer control board). Toner density is detected by TCSB (toner control sensor board).

1. Operation

a. Toner density detection

The Dmax sensor (PD1) on the TCSB (toner control sensor board) detects the density of the toner control patch developed on the drum surface to output the signal corresponding to the detected density to PRCB (printer control board).

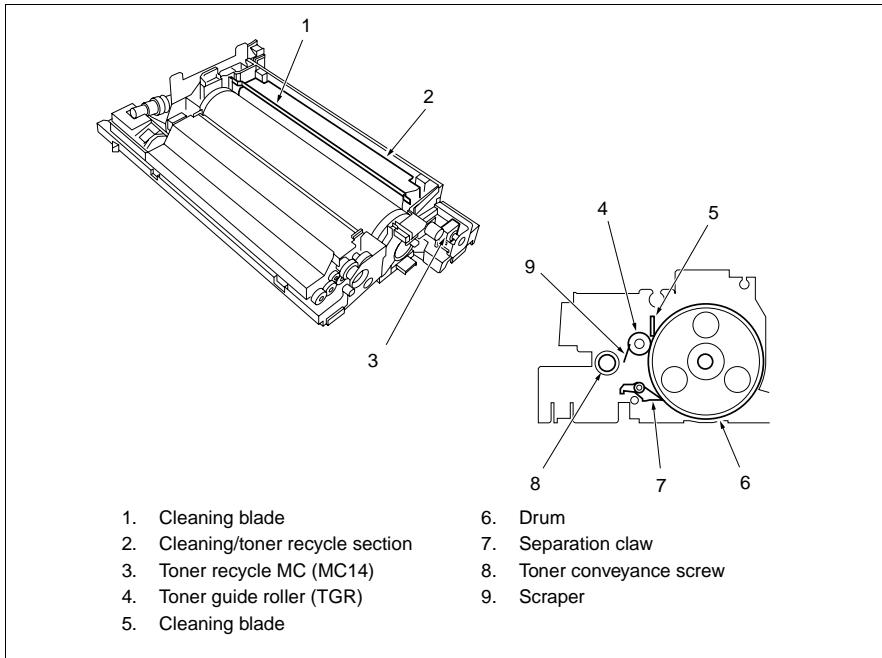
b. Toner supply

When the voltage detected by TCSB (toner control sensor board) is below the specified value, PRCB issues a control signal to drive M12 (toner supply). The relationship between the paper size and toner supply time is summarized in the following table:

Paper size	Supply time (sec)
A3	1.30
B4	0.98
F4	0.98
A4	0.65
B5	0.49
B5R	0.49
A5	0.33
11 X 17	1.30
8.5 X 14	0.98
8.5 X 11	0.65
5.5 X 8.5	0.49

CLEANING/TONER RECYCLE UNIT

[1] Composition



[2] Mechanisms

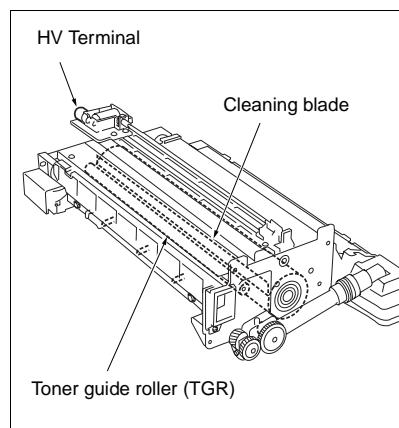
Mechanism	Method
Drum cleaning	Cleaning blade
Toner collection *1	Toner guide roller (TGR)
Toner recycle *2	Screw conveyance + Toner recycle MC (MC14)

*1 Toner collection

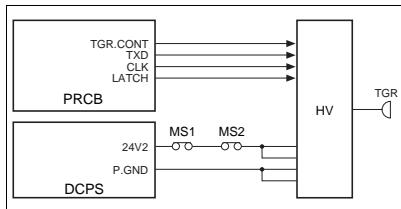
Toner removed by the cleaning blade is collected by the toner guide roller (TGR) and removed by the scraper, then conveyed by the toner conveyance screw to be reused. High pressure is applied to the toner guide roller (TGR) to enhance the toner cleaning ability.

*2 Toner recycle

When the drum performs preliminary rotation as warm-up, toner recycle MC (MC14) is turned OFF, stopping the drive force from the toner conveyance screw. This prevents excessive recycled toner from being conveyed to the developing unit.



[3] TGR (Toner Guide Roller) Control



To enhance the toner cleaning ability, voltage is applied to the TGR (toner guide roller). This voltage is applied by HV (high voltage unit) under the control of PRCB (printer control board). The output level of the applied voltage is transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by the HV unit excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn ON/OFF only the TGR.

1. Operation

a. ON/OFF timing

The TGR is turned ON/OFF in sync with M2 (drum).

b. TGR (toner guide roller) output range

0 to 50 μ A

2. Signals

a. Output signal

(1) TGR.CONT (PRCB to HV)

TGR (toner guide roller) voltage ON/OFF control signal

[L]: Voltage is applied.

[H]: Voltage is not applied.

[4] Other Control

To improve durability of the cleaning blade, the following control is performed:

a. Blade setting mode

A blade setting mode is available in the 36 mode. This mode will perform a task that is required after blade replacement during maintenance, etc. When this mode is used, toner adheres on the drum and then the blade cleans the drum, preventing blade peeling.

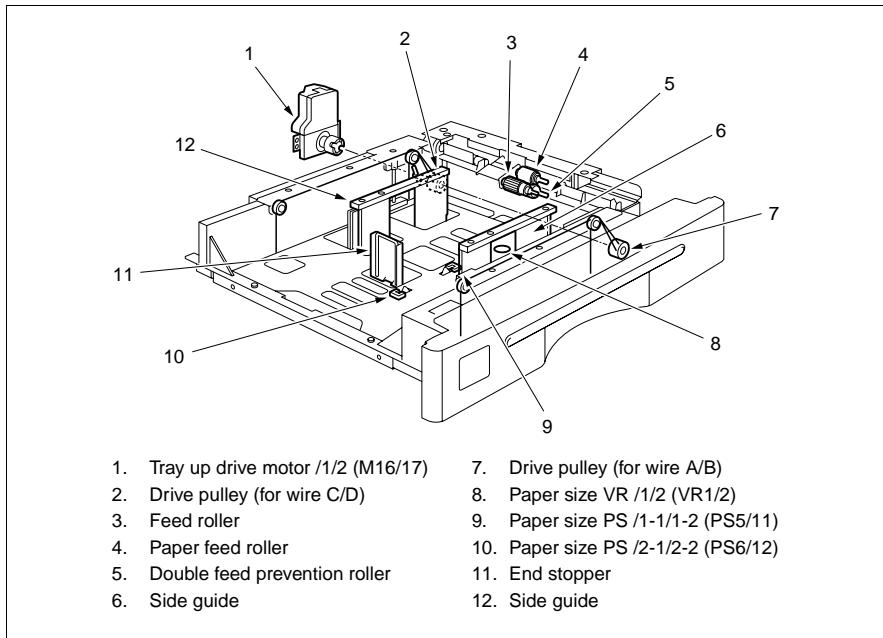
b. Black stripe creation control

To improve durability of the blade (stabilize load and stabilize paper dust crushing), a black stripe of toner is adhered on the drum once every 10 copies and then cleaned.

* Changeable with the 25-mode DIP SW

TRAY 1/2 PAPER FEED UNIT

[1] Composition



Caution: Trays 1 and 2 have the same shape and mechanisms.

[2] Mechanisms

Mechanism	Method
Paper lift-up *1	Up: Driven by wires Down: Falls down by its own weight
Tray loading	Front loading
Double feed prevention	Torque limiter
1st paper feed	Paper feed roller
No paper detection	Photosensor + Actuator
Paper size detection *2 (Universal)	Width: VR Length: Photosensor + Actuators (two)
1st paper feed paper loop mechanism*3	Photosensor + Actuator + clutch

*1 Paper lift-up

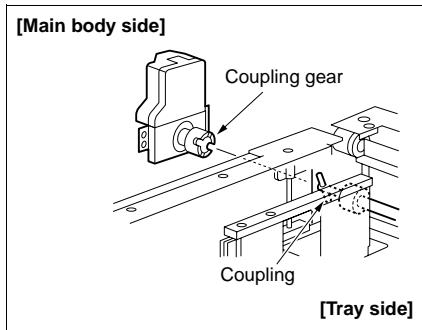
a) Hoisting of up/down plate

Paper feed trays are driven by wires. When a paper tray is loaded, the tray up drive motor/1(M16)/2(M17) rotates to wind the wires around the drive pulleys and consequently the up/down plate in the tray moves up. When the tray upper limit PS1/PS2/PS8 detects the actuator of the roller that has been moved up by paper, the tray up drive motor/1(M16)/2 (M17) stops.

TRAY 1/2 PAPER FEED UNIT

b) Lowering of tray

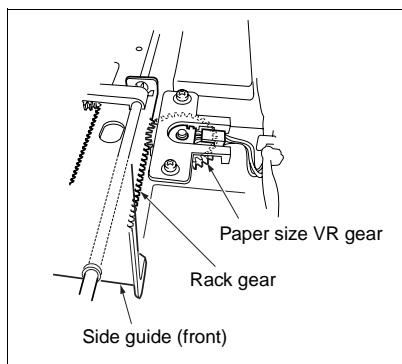
When the paper feed tray is pulled out, the coupling shaft of the tray is disengaged from the coupling gear of the tray up drive motor on the main body side, allowing the up/down plate in the tray to fall down by its own weight.



*2 Paper size detection

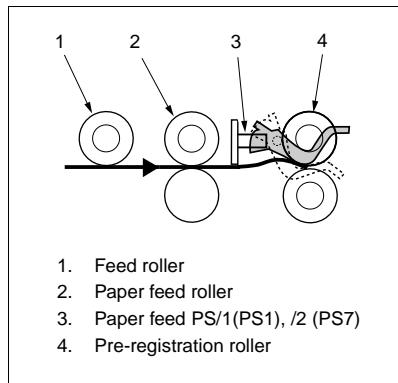
Length: When paper pushes the paper size detection actuator, the paper size PS/2-1/2-2 (PS6/PS12) and the paper size PS/1-1/1-2 (PS5/PS11) turn ON. Thus, the paper size is automatically determined according to the combination of the ON/OFF states of these PSs.

Width: When the side guides of the tray are slid, the rack gear of the side guide (front) turns the paper size VR/1/2 gear. Thus, the paper size is automatically determined according to the change in the resistance value of the VR.

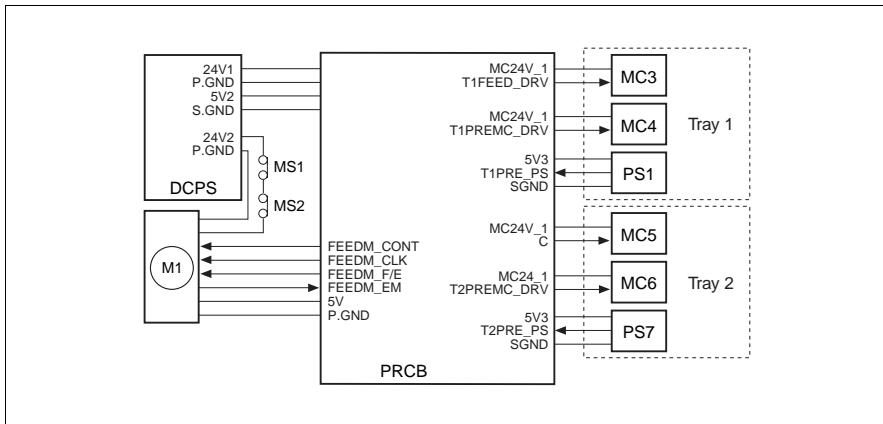


*3 1st paper feed paper loop mechanism

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and paper feed rollers. The fed out paper operates the actuator of the paper feed PS/1 (PS1), the paper feed PS/2 (PS7) turning it ON. The feed and paper feed rollers remain ON for a specified time after the actuation of the paper feed PS/1 (PS1) and PS/2 (PS7) causing a paper loop to form against the pre-registration rollers which are not turning. In this way paper skew is corrected.



[3] First Paper Feed Control



The 1st paper feed from tray 1/2 takes place as the result of the transmission of the drive force from M1 (paper feed) to each paper feed roller by MC3/5 (paper feed MC/1/2) and MC4/6(pre-registration MC/1/2). The feed roller picks up paper using its own weight.

The above operations are controlled by the PRCB (printer control board). Related signals are PS1/7 (paper feed/1/2) and PS25/26 (vertical conveyance/1/2) issued from the vertical conveyance section.

1. Operation

a. Operation of the MC3/5 (paper feed MC/1/2)

- (1) Start timing of printing of the first copy
MC3/5 (paper feed MC/1/2) turns ON at the timing that is determined by the P counter from when copying starts, and turns OFF after a lapse of the specified time from PS1/7 (paper feed/1/2) turning OFF. Thus, paper skew is corrected by forming the loop before pre-registration roller.

- (2) Start timing of printing of the second copy
When the preceding paper turns OFF PS1/7.

- (3) OFF timing
When PS1/7 is turned ON.

b. Operation of the MC4/6 (pre-registration MC1/2)

- (1) ON timing
After a specified time from MC3/5 (paper feed MC/1/2) turning ON.

- (2) OFF timing
When PS1/7 (paper feed/1/2) is turned OFF.

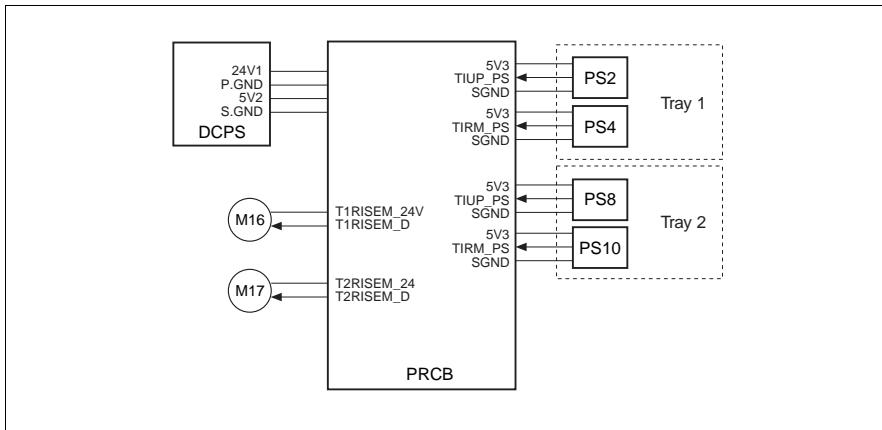
2. Signals**a. PRCB input signals**

- (1) T1PRE_PS (PS1 to PRCB)
Paper passage detection signal (tray 1)
[L]: Detected.
[H]: Not detected.
- (2) T2PRE_PS (PS7 to PRCB)
Paper passage detection signal (tray 2)
[L]: Detected.
[H]: Not detected.

b. PRCB output signals

- (1) T1FEED_DRV (PRCB to MC3)
MC3 drive control signal (tray 1)
[L]: MC3 ON
[H]: MC3 OFF
- (2) T1PREMC_DRV (PRCB to MC4)
MC4 drive control signal (tray 1)
[L]: MC4 ON
[H]: MC4 OFF
- (3) T2FEED_DRV (PRCB to MC5)
MC5 drive control signal (tray 2)
[L]: MC5 ON
[H]: MC5 OFF
- (4) T2PREMC_DRV (PRCB to MC6)
MC6 drive control signal (tray 2)
[L]: MC6 ON
[H]: MC6 OFF

[4] Paper Up Drive Control



Paper stacked in the tray is pushed up by transmitting the drive force of M16/17 (tray up drive/1/2) to the up/down plate in the tray via drive wires. M16/17 are controlled by the PRCB (printer control board). Related signals are PS2/8 (tray upper limit/1/2) and PS4/10 (remaining paper/1/2).

1. Operation

a. Paper up drive control

When tray 1/2 is loaded, M16/17 (tray up drive/1/2) turns ON to lift the up/down plate in the tray. When PS2/8 (tray upper limit/1/2) detects the upper limit of paper as the paper up/down plate in the tray goes up, it turns ON and consequently M16/17 goes OFF, causing the tray to stop going up. When PS2/8 turns OFF after paper is fed, M16/17 goes ON again to move the paper up/down plate upward. The up/down plate in the tray is lowered mechanically by its own weight.

b. Paper up drive timing

(1) ON timing

M16/17 (tray up drive/1/2) is turned ON when loading of a tray is detected. (by shorting wires at both ends of the drawer connector)

(2) OFF timing

One of M16/17 (tray up drive/1/2) is turned OFF when PS2/8 (tray upper limit/1/2) is turned ON.

c. Remaining Paper Detection Control

The level of paper remaining in each tray is detected according to the time that M16/17 (tray up drive/1/2) requires to lift up the up/down plate when the tray is set. This lift-up time (operation time of M16/17) is saved in the PRCB (printer control board). After this, the remaining paper is detected using the paper feed counter. The detected remaining paper level is displayed on the operation panel in five steps. PS4/10 (remaining paper/1/2) are used to detect the remaining paper level when it lowers below about 10 %.

2. Signals

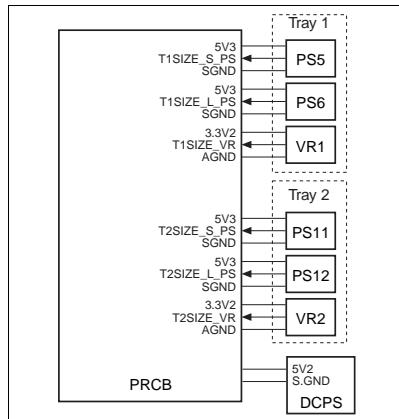
a. PRCB input signals

- (1) TIUP_PS (PS2 to PRCB)
Paper upper limit detection signal (tray 1)
[L]: Not detected.
[H]: Detected.
- (2) TIRM_PS (PS4 to PRCB)
Remaining paper detection signal (tray 1)
[L]: Not detected.
[H]: Detected.
- (3) TIUP_PS (PS8 to PRCB)
Paper upper limit detection signal (tray 2)
[L]: Not detected.
[H]: Detected.
- (4) TIRM_PS (PS10 to PRCB)
Remaining paper detection signal (tray 2)
[L]: Not detected.
[H]: Detected.

b. PRCB output signals

- (1) T1RISEM_24V (PRCB to M16)
M16 ON/OFF control signal (tray 1)
- (2) T2RISEM_24 (PRCB to M17)
M17 ON/OFF control signal (tray 2)

[5] Paper Size Detection Control



The paper size in tray 1/2 is detected using PS5/6/11/12 (paper size/1-1/2-1/1-2/2-2), and VR1/2 (paper size/1/2). Based on the detection signals, the PRCB (printer control board) judges the paper size.

1. Operation

The length of paper is detected using PS5/6/11/12 (paper size/1-1/2-1/1-2/2-2) . Variable resistors (VR1/2) interlocked with the guide position are installed at the bottom of the tray to detect the width of paper.

The relationships between the sensors and paper sizes (lengths) are as follows:

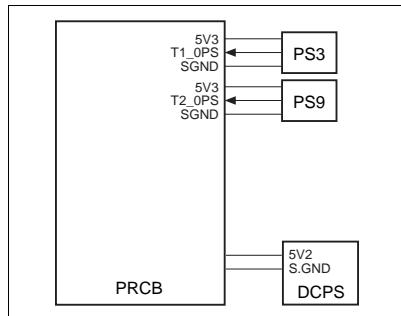
Paper size Sensor	8.5 x 11 or less	A4R to B5R	F4 or larger
PS5/11	OFF	ON	ON
PS6/12	OFF	OFF	ON

2. Signals

a. PRCB input signals

- (1) T1SIZE_S_PS (PS5 to PRCB)
Paper size detection signal (tray 1)
[L]: Paper does not exist.
[H]: Paper exists.
- (2) T1SIZE_L_PS (PS6 to PRCB)
Paper size detection signal (tray 1)
[L]: Paper does not exist.
[H]: Paper exists.
- (3) T2SIZE_L_PS (PS11 to PRCB)
Paper size detection signal (tray 2)
[L]: Paper does not exist.
[H]: Paper exists.
- (4) T2SIZE_S_PS (PS12 to PRCB)
Paper size detection signal (tray 2)
[L]: Paper does not exist.
[H]: Paper exists.
- (5) T1SIZE_VR (VR1 to PRCB)
Paper width detection signal (tray 1)
- (6) T2SIZE_VR (VR2 to PRCB)
Paper width detection signal (tray 2)

[6] No paper detection control



No paper in the tray is detected by PS3 (no paper/1) and PS9 (no paper/2) which are controlled by the PRCB (printer control board).

1. Operation

When the tray becomes empty, PS3/9 (no paper/1/2) is turned OFF, displaying a message on the LCD via OB1 (operation board/1).

2. Signals

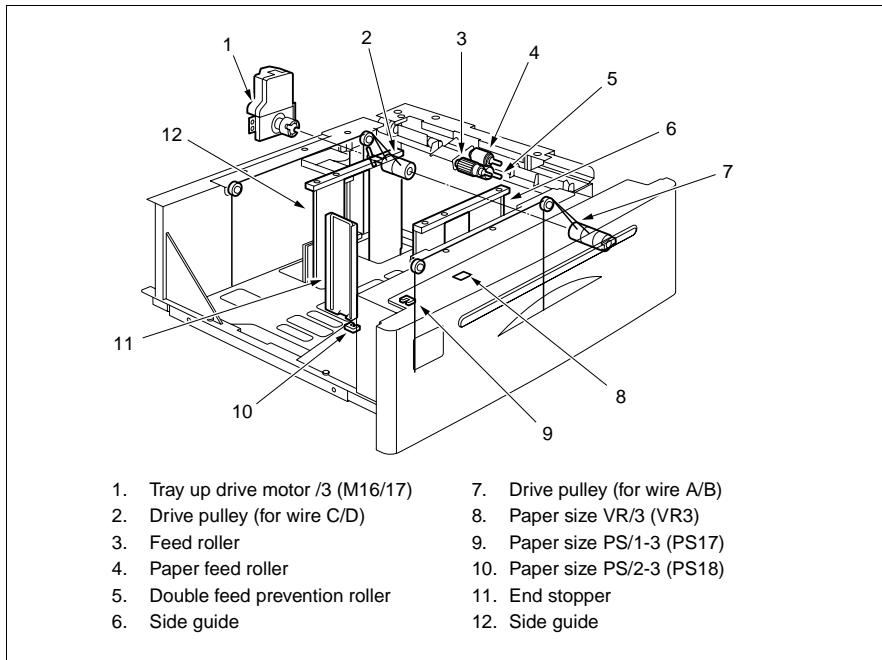
a. PRCB input signals

- (1) T1_0PS (PS3 to PRCB)
No paper detection signal (tray 1)
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.
- (2) T2_0PS (PS9 to PRCB)
No paper detection signal (tray 2)
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.

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TRAY 3 PAPER FEED UNIT

[1] Composition



[2] Mechanisms

Mechanism	Method
Paper lift-up *1	Up: Driven by wires Down: Falls down by its own weight
Tray loading	Front loading
Double feed prevention	Torque limiter
1st paper feed	Paper feed roller
No paper detection	Photosensor + Actuator
Paper size detection *2 (Universal)	Width: VR Length: Photosensor + Actuators (two)
1st paper feed paper loop mechanism*3	Photosensor + Actuator + Magnetic clutch

*1 Paper lift-up

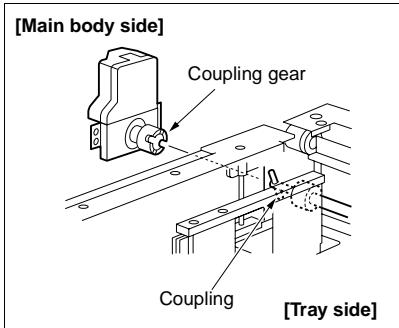
a) Hoisting of up/down plate

Paper feed tray is driven by wires. When the paper tray is loaded, the tray up drive motor 3 (M18) rotates to wind the wires around the drive pulleys and consequently the up/down plate in the tray moves up. When the tray upper limit PS/3 (PS13) detects the actuator of the roller that has been moved up by paper, the tray up drive motor 3 (M18) stops.

TRAY 3 PAPER FEED UNIT

b) Lowering of tray

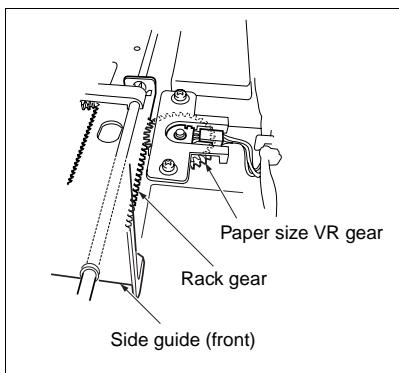
When the paper feed tray is pulled out, the coupling shaft of the tray is disengaged from the coupling gear of the tray up drive motor on the main body side, allowing the up/down plate in the tray to fall down by its own weight.



*2 Paper size detection

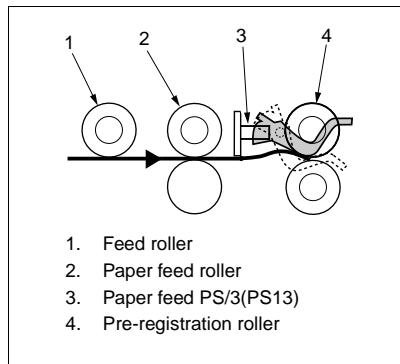
Length: When paper pushes the paper size detection actuator, the paper size PS/1-3 (PS17) and the paper size PS/2-3 (PS18) turns ON. Thus, the paper size is automatically determined according to the combination of the ON/OFF states of this PS.

Width: When the side guides of the tray are slid, the rack gear of the side guide (front) turns the paper size VR3 gear. Thus, the paper size is automatically determined according to the change in the resistance value of the VR.

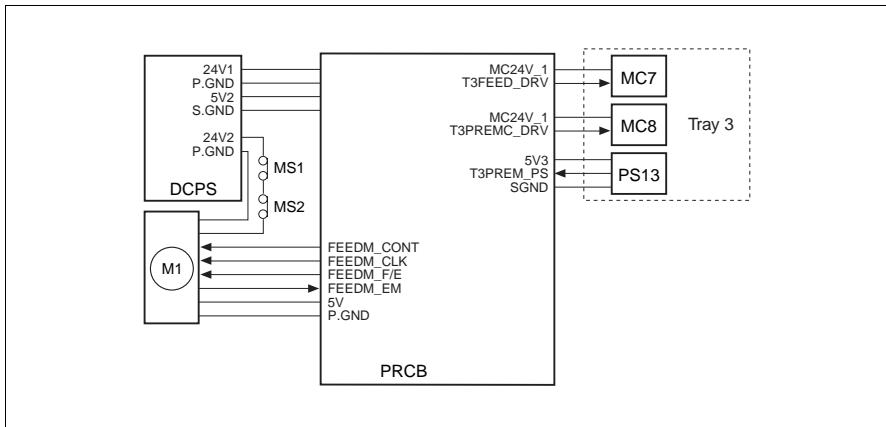


*3 First paper feed paper loop mechanism

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and paper feed rollers. The fed out paper operates the actuator of the paper feed PS/3 (PS13), turning it ON. The feed and paper feed rollers remain ON for a specified time after the actuation of the paper feed PS/3 (PS13) causing a paper loop to form against the pre-registration rollers which are not turning. In this way paper skew is corrected.



[3] First Paper Feed Control



The 1st paper feed from tray 3 takes place as the result of the transmission of the drive force from M1 (paper feed) to each paper feed roller by MC7 (paper feed MC/3) and MC8 (pre-registration MC/3). The feed roller picks up paper using its own weight.

The above operations are controlled by the PRCB (printer control board). Related signals are PS13 (paper feed/3) and PS27 (vertical conveyance/3) issued from the vertical conveyance section.

1. Operation

a. Operation of the MC7 (paper feed MC/3)

- (1) Start timing of printing of the first copy
MC7 (paper feed MC/3) turns ON at the timing that is determined by the P counter from when copying starts, and turns OFF after a lapse of the specified time from PS13 (paper feed/3) turning OFF. Thus, paper skew is corrected by forming the loop before pre-registration roller.

- (2) Start timing of printing of the second copy
When the preceding paper turns OFF PS13.

(3) OFF timing

When PS13 is turned ON.

b. Operating of the MC8 (pre-registration MC/3)

- (1) ON timing
After a specified time from the MC7 (paper feed MC/5).
- (2) OFF timing
When PS13 (paper feed/3) is turned OFF.

TRAY 3 PAPER FEED UNIT

2. Signals

a. PRCB input signals

- (1) T3PREM_PS (PS13 to PRCB)
Paper passage detection signal (tray 3)

[L]: Detected.

[H]: Not detected.

b. PRCB output signals

- (1) T3FEED_DRV (PRCB to MC7)
MC7 drive control signal (tray 3)

[L]: MC7 ON

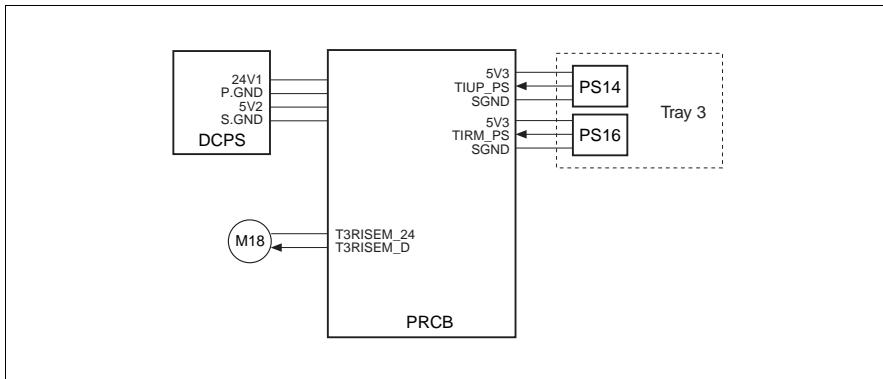
[H]: MC7 OFF

- (2) T3PREM_PS (PRCB to MC8)
MC8 drive control signal (tray 3)

[L]: MC8 ON

[H]: MC8 OFF

[4] Paper Up Drive Control



Paper stacked in the tray is pushed up by transmitting the drive force of M18 (tray up drive/3) to the up/down plate in the tray via drive wires. M18 is controlled by the PRCB (printer control board). Related signals are PS14 (tray upper limit/3) and PS16 (remaining paper/3).

1. Operation

a. Paper up drive control

When tray 3 is loaded, M18 (tray up drive/3) turns ON to lift the up/down plate in the tray. When PS14 (tray upper limit/3) detects the upper limit of paper as the paper up/down plate in the tray goes up, it turns ON and consequently M18 goes OFF, causing the tray to stop going up. When PS14 turns OFF after paper is fed, M18 goes ON again to move the paper up/down plate upward. The up/down plate in the tray is lowered mechanically by its own weight.

b. Paper up drive timing

(1) ON timing

M18 (tray up drive /3) is turned ON when loading of a tray is detected. (by shorting wires at both ends of the drawer connector)

(2) OFF timing

M18 (tray up drive/3) is turned OFF when PS14 (tray upper limit/3) is turned ON.

c. Remaining Paper Detection Control

The level of paper remaining in the tray is detected according to the time that M18 (tray up drive/3) requires to lift up the up/down plate when the tray is set. This lift-up time (operation time of M18) is saved in the PRCB (printer control board). After this, the remaining paper is detected using the paper feed counter. The detected remaining paper level is displayed on the operation panel in five steps. PS16 (remaining paper/3) is used to detect the remaining paper level when it lowers below about 10 %.

TRAY 3 PAPER FEED UNIT

2. Signals

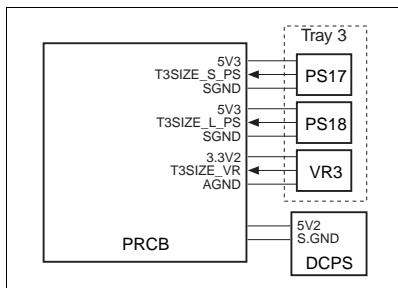
a. PRCB input signals

- (1) TIUP_PS (PS14 to PRCB)
Paper upper limit detection signal
[L]: Not detected.
[H]: Detected.
- (2) TIRM_PS (PS16 to PRCB)
Remaining paper detection signal
[L]: Not detected.
[H]: Detected.

b. PRCB output signals

- (1) T3RISEM_24 (PRCB to M18)
M18 ON/OFF control signal

[5] Paper Size Detection Control



The paper size in tray 3 is detected using PS17 (paper size/1-3), PS18 (paper size/2-3), and VR3 (paper size/3). Based on the detection signals, the PRCB (printer control board) judges the paper size.

1. Operation

The length of paper is detected using PS17/18 (paper size/1-3/2-3). Variable resistor (VR3) interlocked with the guide position is installed at the bottom of the tray to detect the width of paper. The relationships between the sensors and paper sizes (lengths) are as follows:

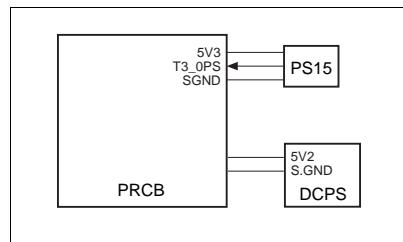
Sensor	Paper size	8.5 x 11 or less	A4R to B5R	F4 or larger
PS17		OFF	ON	ON
PS18		OFF	OFF	ON

2. Signals

a. PRCB input signals

- (1) T3SIZE_S_PS (PS17 to PRCB)
 - Paper size detection signal
 - [L]: Paper does not exist.
 - [H]: Paper exists.
- (2) T3SIZE_L_PS (PS18 to PRCB)
 - Paper size detection signal
 - [L]: Paper does not exist.
 - [H]: Paper exists.
- (3) T3SIZE_VR (VR3 to PRCB)
 - Paper width detection signal

[6] No Paper Detection Control



No paper in the tray is detected by PS15 (no paper/3), and which is controlled by the PRCB (printer control board).

1. Operation

When the tray becomes empty, PS15 (no paper/3) is turned OFF, displaying a message on the LCD via OB1 (operation board/1).

2. Signals

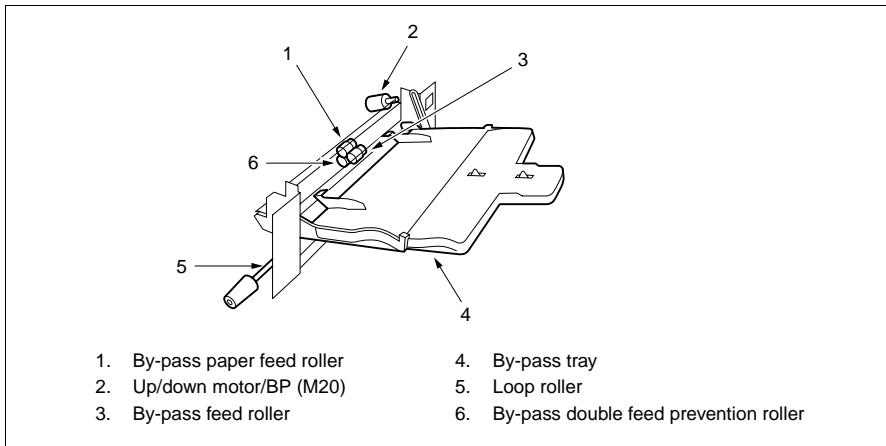
a. PRCB input signals

- (1) PS15 (PS15 to PRCB)
 - No paper detection signal
 - [L]: Paper does not exist in tray.
 - [H]: Paper exists in tray.

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BY-PASS TRAY

[1] Composition

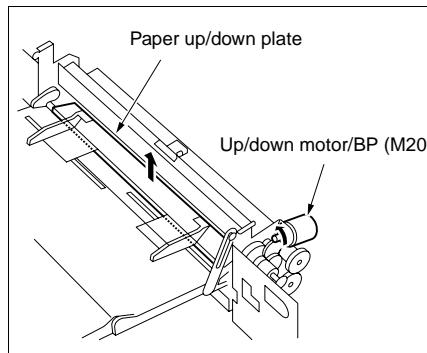


[2] Mechanisms

Mechanism	Method
First paper feed	By-pass feed roller
Paper lift-up *1	Paper up/down plate Up/down motor/BP (M20) + Upper/lower limit detection sensor
Double feed prevention	Torque limiter
No paper detection	Photo sensor + Actuator
Paper size detection *2	Width: VR Length: Photo sensor + Actuators (two)

*1 Paper lift-up

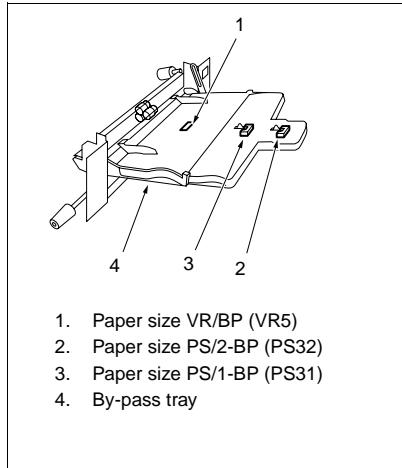
The up/down motor/BP (M20) drives the paper up/down plate via gears. Paper is automatically pushed up to the paper feed position, when the print start button is pressed. When paper is removed or exhausted M20 will drive down the up/down plate.



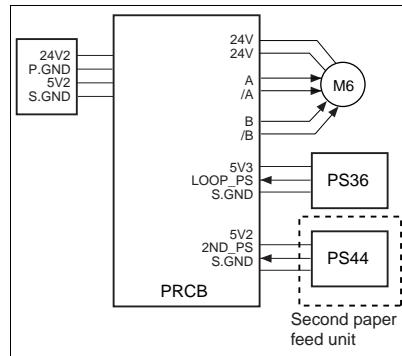
*2 Paper size detection

The paper size is automatically detected by the following three sensors:

- Lateral: Paper size detection VR/BP (VR5)
- Longitudinal: Paper size PS/1, 2-BP (PS31, 32)



[3] First Paper Feed Control



The first paper feed from the by-pass tray takes place as the result of the transmission of the drive force from M6 (loop roller) to the paper feed roller. M6 is controlled by PRCB (printer control board). The related signal is PS36 (loop).

1. Operation

- (1) When printing of the first copy starts
M6 (loop) is turned ON at the timing that is determined by the P counter (that starts when printing starts), thus starting feed of paper.
M6 is stopped temporarily after lapse of a specified time from turning ON of PS44 (registration) by the leading edge of paper, a loop is formed by registration rollers, and the paper is fed to the transfer unit.
- (2) When printing of the second or subsequent copy
After lapse of the specified time from turning OFF of PS44 (registration) by the trailing edge of the preceding paper.

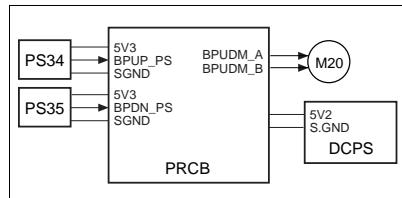
2. Signals

a. PRCB input signals

- (1) LOOP_PS (PS36 to PRCB)
Paper passage detection signal
[L]: Paper does not exist.
[H]: Paper exist.
- (2) 2ND_PS (PS44 to PRCB)
Second paper feed reference timing detection signal
[L]: Paper exists.
[H]: Paper does not exist.

b. PRCB output signals

- (1) A and /A (PRCB to M6)
A-phase drive control pulse signal for M6
- (2) B and /B (PRCB to M6)
B-phase drive control pulse signal for M6

[4] Paper Up/Down Control

Paper in the by-pass tray is pushed up/down by M20 (up/down motor/BP). M20 is controlled by PRCB (printer control board). Related signals are PS34 (tray upper limit /BP) and PS35 (tray lower limit /BP).

1. Operation**a. Paper up/down control**

M20 (up/down motor/BP) is turned ON to push up paper. When PS34 (tray upper limit/BP) detects the paper upper limit and turns ON, M20 turns OFF to stop pushing up paper. When paper is fed and consequently PS34 turns OFF, M20 turns ON again, maintaining the upper limit position of paper.

b. Paper up timing

- (1) ON timing
At start of copying
- (2) OFF timing
M20 (up/down motor/BP) is turned OFF when PS34 (tray upper limit /BP) is turned ON.

c. Paper down timing

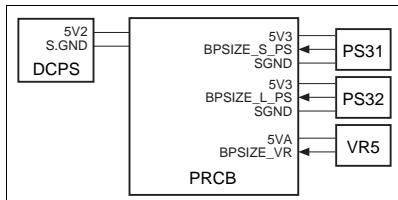
- (1) ON timing
When there is no paper or a paper jam occurs.
- (2) OFF timing
M20 (up/down motor/BP) is turned OFF when PS35 (tray lower limit/BP) is turned ON.

2. Signals

a. PRCB input signals

- (1) BPUP_PS (PS34 to PRCB)
Paper upper limit position detection signal (by-pass tray)
[L]: Not detected.
[H]: Detected.
 - (2) BPDN_PS (PS35 to PRCB)
Paper lower limit position detection signal (by-pass tray)
[L]: Not detected.
[H]: Detected.
- b. PRCB output signal**
- (1) BPUDM_A, B (PRCB to M20)
M20 drive control signal

[5] Paper Size Detection Control



The size of paper in the by-pass tray is detected by PS31 (paper size/1-BP), PS32 (paper size/2-BP), and VR5 (paper size/BP). Based on the detection signals, PRCB (printer control board) judges the paper size.

1. Operation

The length of paper is detected by PS31 (paper size/1-BP) and PS32 (paper size/2-BP). The bypass tray is provided with a variable resistor (VR5) interlocked with the guide position to judge the paper width according to the change in the resistance value.

The relationships between the sensors and paper sizes (lengths) are as follows:

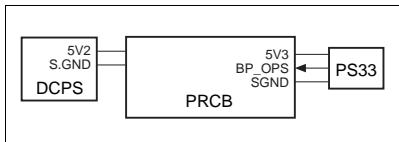
Paper size Sensor	8.5 x 11 or less	A4R to B5R	F4 or larger
PS31	OFF	ON	ON
PS32	OFF	OFF	ON

2. Signals

a. PRCB input signals

- (1) BPSIZE_S_PS (PS31 to PRCB)
Paper size detection signal
[L]: Paper does not exist.
[H]: Paper exists.
- (2) BPSIZE_L_PS (PS32 to PRCB)
Paper size detection signal
[L]: Paper does not exist.
[H]: Paper exists.
- (3) BPSIZE_VR (VR5 to PRCB)
Paper width detection signal

[6] No Paper Detection Control



No paper in the tray is detected by PS33 (no paper/BP) which is controlled by PRCB (printer control board).

1. Operation

When the tray becomes empty, PS33 (no paper/BP) is turned OFF, displaying a message on the LCD via OB1 (operation board/1).

2. Signal

a. Input signal

- (1) BP_OPS (PS33 to PRCB)

No paper detection signal

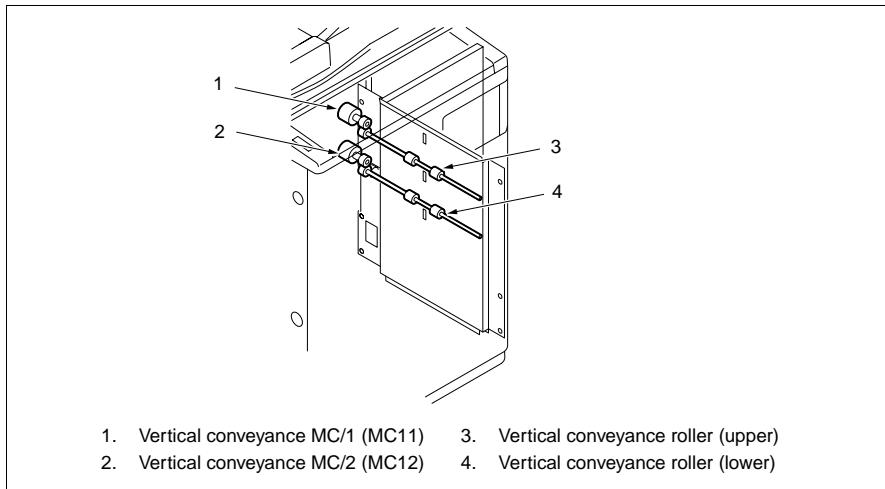
[L]: Paper does not exist.

[H]: Paper exists.

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VERTICAL CONVEYANCE SECTION

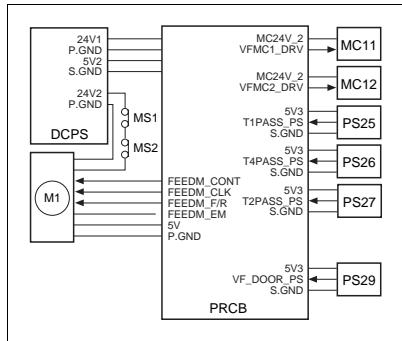
[1] Composition



[2] Mechanisms

Mechanism	Method
Paper conveyance	Rollers
Conveyance drive	Vertical conveyance roller (upper): Paper feed motor (M1) Vertical conveyance roller (lower): Paper feed motor (M1)

[3] Vertical Conveyance Control



In the vertical conveyance section, paper is fed vertically by transmitting the drive force of M1 (paper feed) to the vertical conveyance roller (upper) and vertical conveyance roller (lower) via MC11 (vertical conveyance MC/1) and MC12 (vertical conveyance MC/2). The above parts are controlled by PRCB (printer control board). Related signals are PS25 to PS27 (vertical conveyance/1 to /3) and PS29 (vertical conveyance door open/close).

1. Operation

Paper fed from tray 1 is then fed to the second paper feed unit directly without passing through vertical conveyance rollers. When paper is fed from tray 2 or 3, PS26 (vertical conveyance/2) is used to feed paper to the standby position. When PS26 is turned OFF by the preceding paper, MC11 and MC12 (vertical conveyance MC/1 and MC/2) are turned ON and the paper fed from tray 2 or 3 is fed to the standby position (where PS26 was turned ON) by the drive force of M1 (paper feed). MC11 and MC12 are turned ON after lapse of the specified time from restart of registration of the preceding paper to rotate all vertical conveyance rollers, thus feeding paper to the second paper unit.

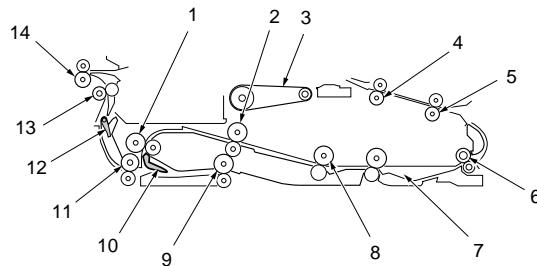
2. Signals

a. PRCB input signals

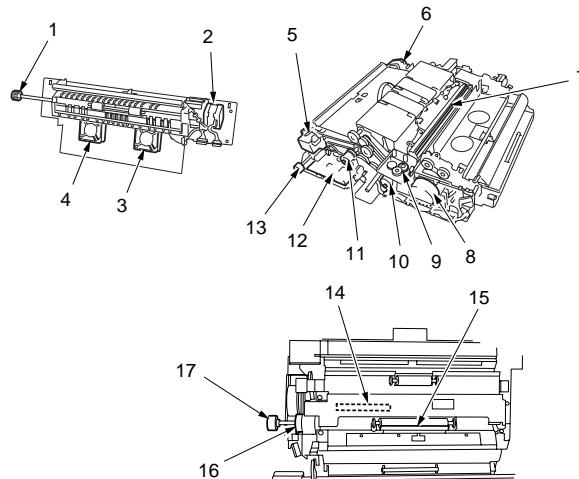
- (1) T1PASS_PS (PS25 to PRCB)
Paper passage detection signal (for tray 1)
[L]: Not detected.
[H]: Detected.
 - (2) T2PASS_PS (PS26 to PRCB)
Paper passage detection signal (for tray 2)
[L]: Not detected.
[H]: Detected.
 - (3) T3PASS_PS (PS27 to PRCB)
Paper passage detection signal (for tray 3)
[L]: Not detected.
[H]: Detected.
 - (4) VF_DOOR_PS (PS29 to PRCB)
Vertical conveyance section open/close detection signal
[L]: Open
[H]: Closed
- ##### b. PRCB output signals
- (1) VFCMC1_DRV (PRCB to MC11)
MC11 drive control signal
[L]: MC11 ON
[H]: MC11 OFF
 - (2) VFCMC2_DRV (PRCB to MC12)
MC12 drive control signal
[L]: MC12 ON
[H]: MC12 OFF

ADU

[1] Composition



- | | |
|--------------------------------|----------------------------------|
| 1. ADU conveyance roller 1 | 8. ADU conveyance roller 3 |
| 2. ADU conveyance roller 2 | 9. ADU reverse roller |
| 3. Conveyance belt | 10. ADU gate |
| 4. Pre-transfer roller | 11. Reverse/exit roller |
| 5. Registration roller | 12. Reverse/exit gate |
| 6. ADU pre-registration roller | 13. Paper exit conveyance roller |
| 7. ADU conveyance roller 4 | 14. Paper exit roller |



- | | |
|---|---------------------------------------|
| 1. Paper exit roller rotation knob | 10. ADU deceleration MC (MC2) |
| 2. Paper exit motor (M7) | 11. ADU conveyance MC (MC13) |
| 3. Paper exit fan/R (FM7) | 12. ADU drive board (ADUDB) |
| 4. Paper exit fan/F (FM6) | 13. Reverse/exit roller rotation knob |
| 5. Reverse gate SD (SD7) | 14. Mis-centering PS (PS70) |
| 6. Reverse/exit motor (M8) | 15. Paper dust cleaning brush |
| 7. TSL | 16. Registration MC (MC1) |
| 8. Conveyance motor (M5) | 17. Registration roller rotation knob |
| 9. Transfer/separation cleaning motor (M10) | |

[2] Mechanisms

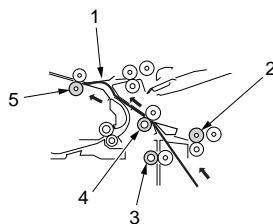
Mechanisms	Method
Second paper feed paper loop *1	Loop roller (trays 1-3/LCT), Feed roller (by-pass tray), ADU pre-registration roller (ADU)
Image position correction *2	Image position is corrected according to the information detected by PS43 (leading edge) and PS70 (paper mis-centering).
Second paper feed auxiliary mechanism *3	Pre-transfer roller
Second paper feed paper conveyance	Conveyance motor (M5) drive
Second paper feed jam removal mechanism	Opening/closing of jam removal section of pre-transfer section, Registration roller rotation knob
Conveyance section paper conveyance	Conveyance belts (two)
Conveyance section paper suction mechanism *4	Conveyance suction fan (FM3) + Suction duct
Reverse/exit section paper path selection *5	Reverse/exit selection gate, Reverse gate SD (SD7) drive paper is automatically guided owing to the paper guide shape.
Reverse/exit section paper conveyance	Reverse/exit roller, ADU reverse roller
Reverse/exit section paper conveyance drive	Reverse/exit motor (M8) drive, ADU reverse motor (M9) drive
Reverse/exit section jam removal mechanism	Paper exit guide plate opening/closing, ADU bottom plate assembly opening/closing, Reverse/exit roller rotation knob
Paper exit section jam removal mechanism	Paper exit roller rotation knob
Paper exit conveyance	Paper exit motor (M7) drive
ADU paper feed *6	Nonstack
ADU reverse paper conveyance path selection	Paper is automatically guided owing to ADU gate operation and the paper guide shape.
ADU paper conveyance	ADU reverse roller, ADU conveyance rollers 1 and 2
ADU pre-registration mechanism *7	ADU pre-registration roller, ADU conveyance rollers 3 and 4
Thick paper conveyance *8	Conveyance motor (M5), Paper exit motor (M7), reverse/exit motor (M8), ADU reverse motor (M9), linear velocity selection
ADU paper conveyance drive	Conveyance motor (M5), reverse/exit motor (M8), ADU reverse motor (M9), loop roller motor (M6)
ADU jam removal mechanism	ADU bottom plate assembly opening/closing, Exit guide plate opening/closing

*1 Second paper feed paper loop mechanism

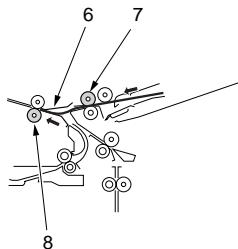
A paper loop is formed before the registration roller to correct mis-centering of paper during second paper feed. The paper loop is formed by pushing the fed paper against the registration roller for the prescribed time. The paper loop mechanism differs between paper feed paths.

- Trays 1-3, LCT paper feed
Loop roller
- By-pass tray
By-pass feed roller
- ADU
ADU pre-registration roller

Trays 1-3/LCT

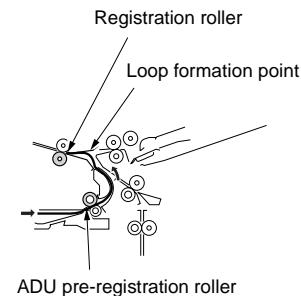


<By-pass tray>



1. Loop formation point
2. Feed roller (LCT)
3. Vertical conveyance roller (upper)
4. Loop roller
5. Registration roller
6. Loop formation point
7. Feed roller
8. Registration roller

<ADU>



*2 Image position correction

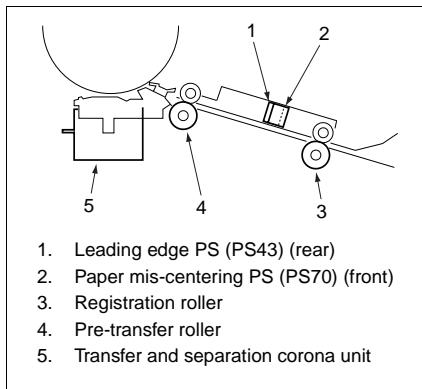
A leading edge PS (PS43) and paper mis-centering PS (PS70) are provided at the exit of the registration roller, thus enhancing the positional accuracy of the copy image.

The paper position information detected by PS43 and PS70 is processed by the image processor to correct the image write position in such a manner that the document (scanned image) position match the copy paper position.

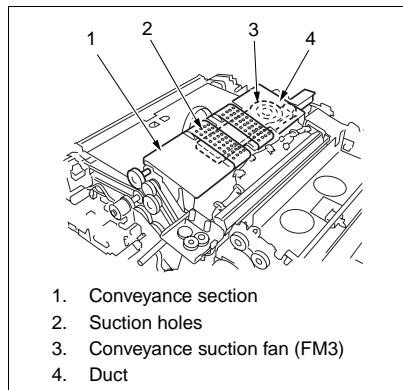
The leading edge PS (PS43) is used to correct the write position in the sub-scanning direction, and the mis-centering PS (PS70) is used to correct the write position in the main scanning direction.

***3 Second paper feed auxiliary mechanism**

The distance between the registration roller and the transfer and separation corona unit is made long to achieve the time required for correcting the image position. To assist conveyance of paper between the registration roller and the image transfer and separation corona unit, a pre-transfer roller is provided just before the transfer and separation corona unit.

***4 Conveyance section paper suction mechanism**

A paper suction duct is provided in the middle of the conveyance section and is led to the conveyance suction fan (FM3) installed in the ADU. To improve transportability of the paper that passes through the conveyance section, the conveyance suction fan is used to provide suction for the paper.

***5 Reverse/exit paper path selection**

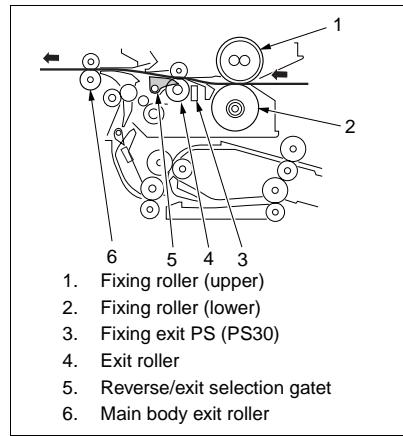
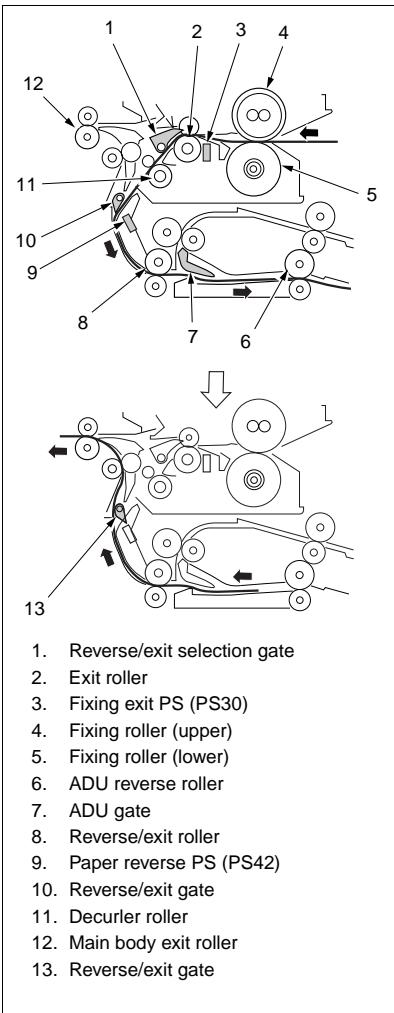
The reverse/exit selection gate in the fixing unit determines whether the paper is to be ejected straight or reversed and ejected. The paper gate is operated by the reverse gate SD (SD7) installed in the ADU.

Because paper is reversed in the reverse/exit section in the ADU, the reverse/exit section is provided with a reverse/exit gate to switch between the forward and backward paper conveyance paths. This gate has no drive mechanism and it is opened by the rigidity of the paper.

a. Reverse/exit operation

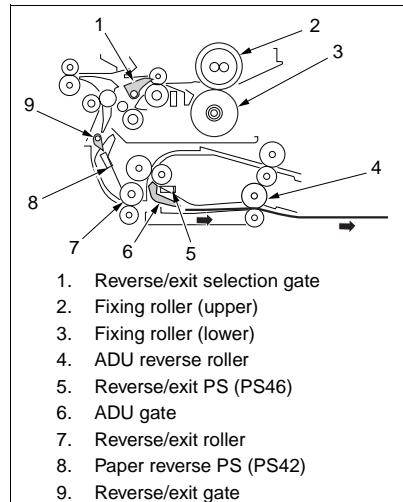
Normally, the reverse/exit selection gate opens when the reverse gate SD (SD7) is turned OFF. The paper fed by the exit roller in the fixing unit is fed, through the path under the reverse/exit selection gate, to the reverse/exit section in the ADU by the decurler roller. Normally, the reverse/exit gate in the reverse/exit section is closed. This gate is opened by the rigidity of the fed paper, allowing the paper to be fed to the reverse/exit roller, ADU gate, and ADU reverse roller sequentially. Normally, the ADU gate is closed and it has no drive mechanism; it is opened by the rigidity of paper.

When the paper reverse PS (PS42) detects the trailing edge of paper and consequently turns OFF, the reverse/exit roller and ADU reverse roller start rotating in the opposite direction, feeding the paper back toward the fixing unit. However, since the reverse/exit gate is closed, the paper is fed to the main body exit roller via the path outside this gate. Thus, the paper is ejected with the print side down.



c. ADU paper conveyance

In the two-sided copy mode, the paper finished with printing on the front side is fed, through the path under the reverse/exit selection gate, into the reverse/exit section just like the reverse/exit operation. Then, the paper is fed to the ADU by the reverse/exit roller and ADU reverse roller. These rollers do not rotate in the opposite direction even when the paper reverse PS (PS42) detects the trailing edge of the paper, allowing the paper to be fed until the reverse/exit PS (PS46) turns OFF.



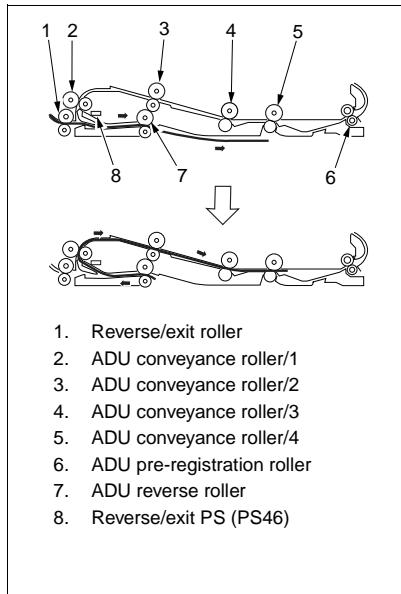
b. Straight ejection

When paper is ejected straight, the reverse gate SD (SD7) is turned ON to close the reverse/exit selection gate. The paper fed by the paper exit roller is fed to the paper exit roller with the print side up.

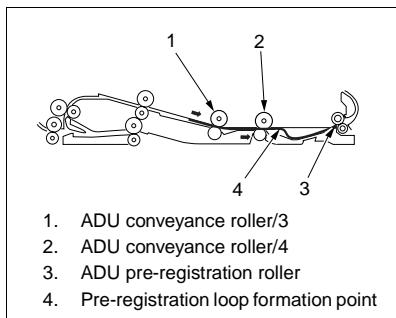
*6 Non-stack paper feed mechanism

In the two-sided copy mode, the ADU reverse roller starts rotating in the opposite direction when the reverse/exit PS (PS46) detects the trailing edge of paper and consequently it turns OFF. The paper is fed toward the reverse/exit section. However, since the ADU gate is closed, the paper is fed to the ADU conveyance roller/1 through the path above this gate. Thus, the paper is reversed and fed to the ADU exit, without being stacked in the ADU.

The reversed paper is fed by ADU conveyance rollers 1-4.



ON/OFF the drive force of ADU conveyance rollers 1 and 2 in order to stop the looped paper temporarily and to adjust the loop size. In addition, an ADU deceleration MC (MC2) is provided to turn ON/OFF the drive force of ADU conveyance rollers 3 and 4. The ADU conveyance MC (MC13) is turned ON/OFF only when the paper length is 325 mm or longer. If the paper length is less than 325 mm, it stays ON during copying.



*8 Thick paper conveyance mechanism

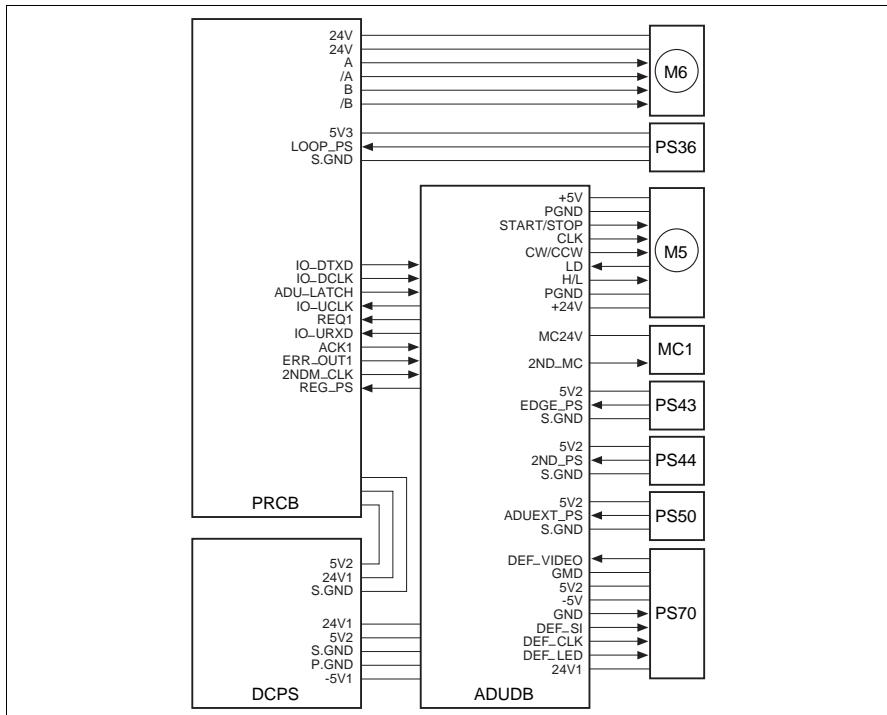
To enhance reliability of thick paper copying, the conveyance motor (M5), paper exit motor (M7), reverse/exit motor (M8), and ADU reverse motor (M9) are switched as shown below according to the paper type selected in the key operator mode.

Paper type	Linear speed	
Thick paper	185 mm/s	
Others	280 mm/s	55-cpm
	320 mm/s	65-cpm

*7 ADU pre-registration mechanism

In the ADU, paper is looped by the ADU pre-registration roller to correct paper inclination in the conveyance section. The ADU pre-registration roller stops when the loop roller motor (M6) stops; however, the ADU conveyance roller continues to feed paper at a constant speed, forming a paper loop between the ADU pre-registration roller and ADU conveyance roller. As a result, paper inclination is corrected. When M6 starts, the ADU pre-registration roller starts rotating to feed the paper to the second feed section. An ADU conveyance MC (MC13) is provided to turn

[3] Loop/Second Paper Feed Control



The paper fed from each tray is fed to the second paper feed section. The second paper feed takes place as the result of the transmission of the drive force from M5 (conveyance) to the second paper feed roller via MC1 (registration). The second paper feed section is preceded by a loop roller used to form a paper loop, and this conveyance section is also used for the paper fed from the LCT. It is not used for the paper fed from the by-pass tray or ADU. The loop roller is driven by M6 (loop roller). The above parts are controlled by PRCB (printer control board) via ADUDB (ADU drive board). M6 is driven by PRCB directly.

Related signals are PS36 (loop), PS43 (leading edge), PS44 (registration), and PS50 (ADU pre-registration).

1. Operation

a. Loop control

After a lapse of the specified time from turning ON of PS44 (registration) by the paper fed from each tray or the ADU at a high speed, M6 (loop roller) is turned OFF to form a paper loop in the registration section.

b. Second paper feed control

After formation of a paper loop under loop control, MC1 (registration) is turned ON to transmit the drive force of M5 (conveyance) to the second paper feed roller, starting the second paper feed.

c. Image position correction control

Mis-centering of the paper feed from each tray is detected by PS70 (paper mis-centering) and the paper leading edge timing is detected by PS43 (leading edge) and they are corrected at the time of image write.

A contact image sensor is used as PS70 (paper mis-centering). The paper edge position is detected by paper mis-centering sensors. Based on the edge position information, the image write position is shifted to correct mis-centering and leading edge timing at the time of image write. PS70 operates after a lapse of the specified time from turning ON of PS43 (leading edge).

2. Signals

a. Input signals

- (1) LOOP_PS (P36 to PRCB)

Loop formation reference timing detection signal.

The leading edge or trailing edge of paper is detected.

[L]: Detected.

[H]: Not detected.

- (2) LD (M5 to ADUDB)

M5 fault detection signal

[L]: Normal

[H]: Abnormal

- (3) DEF_VIDEO (PS70 to ADUDB)

PS70 (paper mis-centering) sensor output signal

- (4) 2ND_PS (PS44 to ADUDB)

Second paper feed reference timing detection signal

[L]: Detected.

[H]: Not detected.

- (5) EDGF_PS (PS43 to ADUDB)

Paper leading edge detection signal

[L]: Detected.

[H]: Not detected.

- (6) REG_PS (ADUDB to PRCB)

Paper leading edge detection signal.

[L]: Detected.

[H]: Not detected.

b. Output signals

- (1) START/STOP (ADUDB to M5)

M5 (conveyance) drive control signal

[L]: M5 ON

[H]: M5 OFF

- (2) 2NDM_CLK, CLK (PRCB to ADUDB to M5)

M5 (conveyance) clock signal

- (3) 2ND_MC (ADUDB to MC1)

MC1 (registration) drive control signal

[L]: MC1 ON

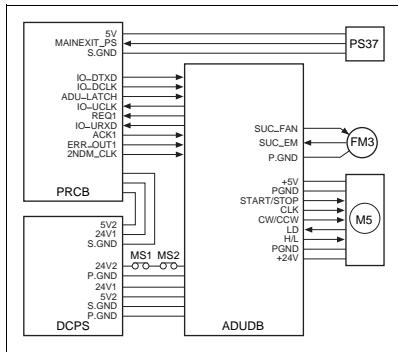
[H]: MC1 OFF

- (4) DEF_SI (ADUDB to PS70)

PS70 (paper mis-centering) start pulse

- (5) DEF_CLK (ADUDB to PS70)
PS70 (paper mis-centering) drive clock signal
- (6) DEF_LED (ADUDB to PS70)
PS70 (paper mis-centering) LED control signal
- (7) CW/CCW (ADUDB to M5)
M5 (conveyance) rotational direction indication signal
[L]: CCW
[H]: CW
- (8) H/L (ADUDB to M5)
M5 (conveyance) rotational speed indication signal
[L]: Low speed
[H]: High speed
- (9) A, /A (PRCB to M6)
M6 (loop roller) A-phase drive control pulse signal
- (10) B, /B (PRCB to M6)
M6 (loop roller) B-phase drive control pulse signal

[4] Paper Conveyance Control



The paper fed from the second paper feed section is fed to the fixing unit by the pre-transfer roller and conveyance belt driven by M5 (conveyance). In the conveyance section, paper suction is provided by FM3 (conveyance suction) through the duct installed on the back of the conveyance belt. M5 and FM3 are controlled by PRCB (printer control board) via ADUDB (ADU drive board).

1. Operation

a. M5 (conveyance) operation

M5 (conveyance) starts when the START button is pressed, and it stops when the PS37 (paper exit) turns OFF at detection of the trailing edge of the last sheet of paper.

b. FM3 (conveyance suction) operation

FM3 is turned ON/OFF in sync with M2 (drum).

2. Signals

a. Input signals

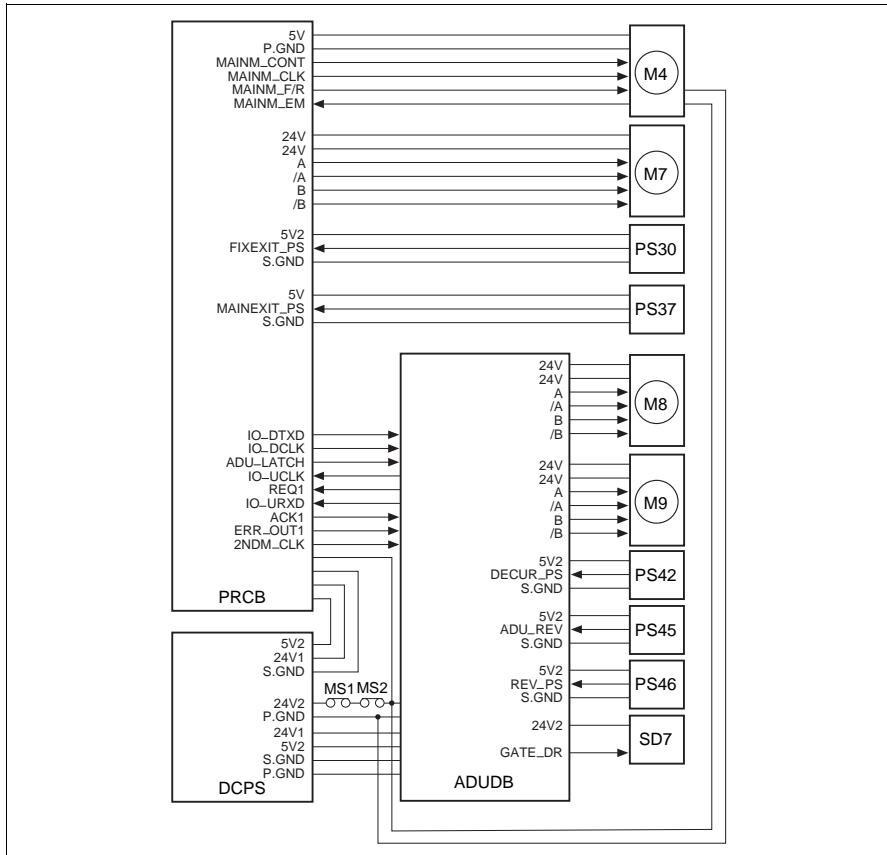
- (1) MAINEXIT_PS (PS37 to PRCB)
Main body exit section paper passage detection signal
[L]: Detected.
[H]: Not detected.

- (2) SUC_EM (FM3 to ADUDB)
FM3 (conveyance suction) fault detection signal
[L]: FM3 is normal.
[H]: FM3 is abnormal.

b. Output signal

- (1) MAINEXIT_PS (ADUDB to FM3)
FM3 (conveyance suction) drive signal
[L]: FM3 OFF
[H]: FM3 ON

[5] Paper Reverse and Exit Control



The reserve/exit selection gate in the fixing unit determines whether the paper fed from the fixing unit is to be ejected straight or reversed.

The reverse/exit selection gate is driven by SD7 (reverse gate). The decurler roller is driven by M4 (fixing) and the reverse/exit roller is driven by M8 (reverse/exit). The ADU reverse roller is driven by M9 (ADU reverse). The exit conveyance roller and main body exit roller are driven by M7 (paper exit).

M4 and M7 are controlled by PRCB (printer control board) directly. M8, M9, and SD7 are controlled by PRCB (printer control board) via ADUDB (ADU drive board).

Related signals are PS30 (fixing exit), PS37 (paper exit), and PS42 (paper reverse).

1. Operation

a. Reverse/exit selection gate control

The reverse/exit selection gate is driven by SD7 (reverse gate). Normally, the reverse/exit selection gate is open to guide paper to the reverse/exit section in ADU. When paper is ejected straight, SD7 is turned ON to close the reverse/exit selection gate.

When paper is ejected straight, SD7 is turned ON when the START button is pressed and it is turned OFF when PS37 (paper exit) turns OFF at detection of the trailing edge of the last sheet of paper.

b. M4 (fixing) control

M4 (fixing) starts when the START button is pressed, and it stops when PS37 (paper exit) turns OFF at detection of the trailing edge of the last sheet of paper.

(1) Straight paper exit

Paper is fed to the paper exit section straight by the paper exit roller driven by M4 (fixing) because SD7 (reverse gate) is turned ON to close the reverse/exit selection gate.

(2) Paper reverse/exit

Because SD7 (reverse gate) has been turned OFF to open the reverse/exit selection gate, paper is fed to the reverse/exit section in ADU by the paper exit roller and decurler roller driven by M4 (fixing).

(3) ADU conveyance

Same as paper reverse/exit.

c. Reverse control

M8 (reverse/exit) starts when the START button is pressed, and it stops when PS37 (paper exit) turns OFF at detection of the trailing edge of the last sheet of paper. Its rotational speed and direction change when paper is ejected or reversed, or is fed to ADU.

(1) Paper reverse/exit

The paper fed from the fixing unit is then fed to the reverse/exit section via the reverse/exit selection gate. Normally, M8 and M9 are rotating in the forward direction at a low speed, feeding the paper to the ADU reverse section.

When PS30 (fixing exit) detects the trailing edge of paper and consequently turns OFF, M8 and M9 start rotating in the forward direction at a high speed, feeding paper to the ADU reverse section continuously. When PS42 (paper reverse) detects the trailing edge of paper and conse-

quently turns OFF, M8 and M9 start rotating in the opposite direction at a high speed, feeding the paper in the paper exit direction.

When PS45 (ADU paper reverse) detects the trailing edge of paper and consequently turns OFF, M9 starts rotating in the forward direction at a low speed. After a lapse of the specified time from detection of the trailing edge of paper by PS46 (reverse/exit), M8 (reverse/exit) starts rotating in the forward direction at a low speed, proceeding to feed the next sheet of paper.

(2) ADU conveyance

The operation performed from the moment PS30 (fixing exit) turns OFF at detection of the trailing edge of paper to the moment M8 (reverse/exit) and M9 (ADU reverse) start rotating in the forward direction at a high speed, is the same as that of reverse/exit.

When PS46 (reverse/exit) turns OFF at detection of the trailing edge of paper, M8 starts rotating in the forward direction at a high speed, proceeding to feed the next sheet of paper.

After a lapse of the specified time from detection of the trailing edge of paper by PS46, M9 starts rotating in the opposite direction at a low speed, feeding paper to the ADU conveyance section. When PS45 (ADU paper reverse) detects the trailing edge of paper and consequently turns OFF, M9 starts rotating in the forward direction at a low speed, proceeding to feed the next sheet of paper.

d. M7 (paper exit) control

M7 (paper exit) turns ON when the START button is pressed. The OFF timing is different between paper straight exit and reverse/exit.

(1) Paper straight exit

The paper fed from the fixing unit by the exit roller is ejected by the main body exit roller driven by M7 (paper exit). M7 is always rotating at a constant speed and it is turned OFF when PS37 (paper exit) turns OFF at detection of the trailing edge of the last sheet of paper.

(2) Paper reverse/exit

The paper fed from the reverse/exit section in ADU with it reversed, is ejected by the exit conveyance roller and main body exit roller which are driven by M7 (paper exit) rotating at a high speed. After a lapse of the specified time from turning OFF of PS42 (paper reverse) at detection of the trailing edge of paper, M7 (paper exit)

starts rotating at a low speed to even up the edges of paper in the exit tray. When PS37 (paper exit) is turned OFF at detection of the trailing edge of paper, M7 starts rotating at a high speed again, proceeding to eject the next sheet of paper. When PS37 detects the trailing edge of the last sheet of paper, M7 (paper exit) stops. If FNS is provided, M7 is always rotating at a high speed.

2. Signals

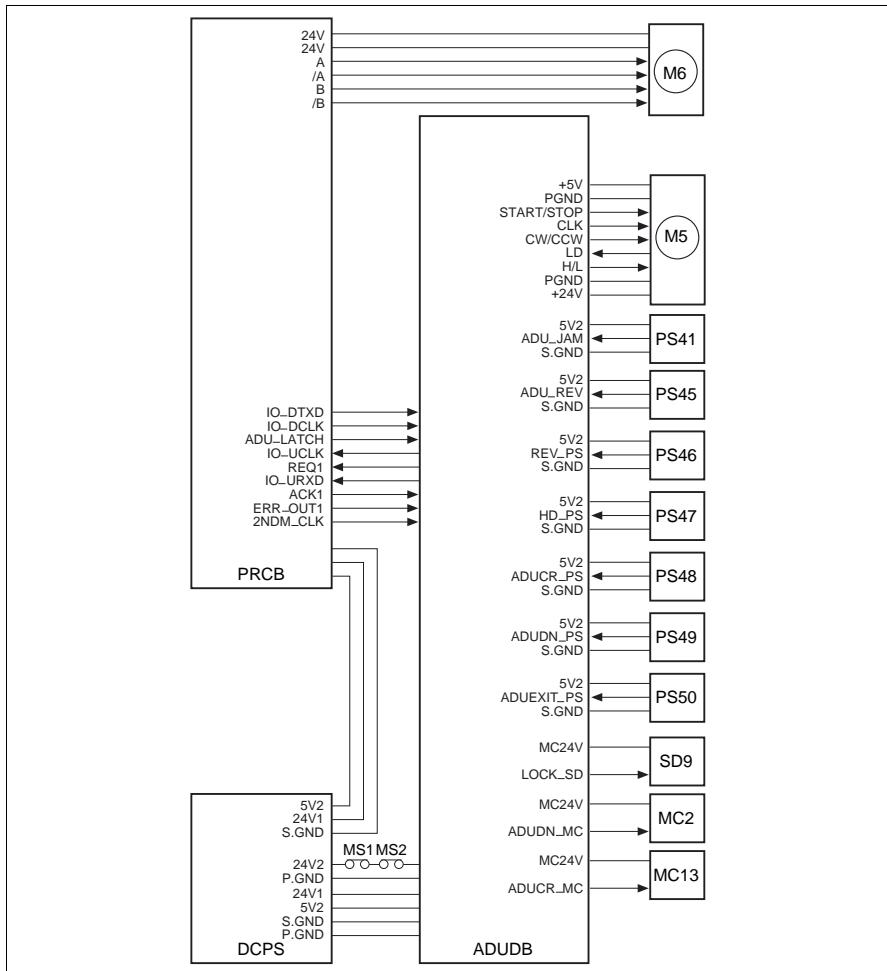
a. Input signals

- (1) FIXEXIT_PS (PS30 to PRCB)
Detection signal of paper passage at fixing unit exit
[L]: Detected.
[H]: Not detected.
- (2) DECUR_PS (PS42 to ADUDB)
Reverse/exit gate open/close detection signal
[L]: Gate is open.
[H]: Gate is closed.
- (3) ADU_REV (PS45 to ADUDB)
ADU reverse section paper passage detection signal
[L]: Detected.
[H]: Not detected.
- (4) REV_PS (PS46 to ADUDB)
ADU gate open/close detection signal
[L]: Gate is open.
[H]: Gate is closed.

b. Output signals

- (1) GATE_DR (ADUDB to SD7)
SD7 (reverse gate) ON/OFF drive signal
[L]: SD7 ON
[H]: SD7 OFF
- (2) A, /A (PRCB to M7)
M7 (paper exit) A-phase drive control pulse signal
- (3) B, /B (PRCB to M7)
M7 (paper exit) B-phase drive control pulse signal
- (4) A, /A (ADUDB to M8)
M8 (reverse/exit) A-phase drive control pulse signal
- (5) B, /B (ADUDB to M8)
M8 (reverse/exit) B-phase drive control pulse signal

[6] ADU Paper Conveyance/Feed Control



The paper fed from the ADU paper reversal section is fed by transmitting the drive force of M5 (conveyance) to ADU conveyance rollers 1 to 4. Paper is then fed to the second paper feed section by the drive force of M6 (loop roller). In the ADU conveyance section, pre-loop control is performed to correct paper skew forcibly. To perform this control, MC2 (ADU deceleration) and MC13 (ADU conveyance) are provided. Related signals

are PS41 (ADU conveyance/1), PS45 (ADU paper reverse), PS46 (reverse/exit), PS48 (ADU paper conveyance/2), PS49 (ADU deceleration), and PS50 (ADU pre-registration). SD9 (ADU lock) is provided to lock the handle of the ADU.

1. Operation

a. ADU conveyance control

The paper fed from the ADU paper reversal section is fed to ADU pre-registration rollers at a high speed by transmitting the drive force of M5 (conveyance) to ADU conveyance rollers 1 to 4. ADU conveyance rollers 1 and 2 are turned ON/OFF by MC13 (ADU conveyance) and ADU conveyance rollers 3 and 4 are controlled by MC2 (ADU deceleration). After a lapse of the specified time from turning ON of PS49 (ADU deceleration), MC2 and MC13 are turned OFF to press the paper against the ADU pre-registration roller, forming a paper loop.

MC13 is turned ON/OFF only when the paper length is 325 mm or longer. If the paper length is less than 325 mm, it stays ON during copying.

b. ADU feed control

M6 (loop roller) starts rotating at a high speed after a lapse of the specified time from detection of the leading edge of paper by PS50 (ADU pre-registration). Thus, the ADU pre-registration roller starts rotating to feed paper to the second paper feed section. At this time, MC2 (ADU deceleration) and MC13 (ADU conveyance) are turned OFF so that the drive force of M5 (conveyance) which is also used to drive the second paper feed section is not transmitted to ADU conveyance rollers 1, 2, 3, and 4. MC2 and MC13 are turned ON after a lapse of the specified time from detection of the trailing edge of paper by PS49 (ADU deceleration), proceeding to feed the next sheet of paper.

After a lapse of the specified time from detection of the leading edge of paper by PS44 (registration), M6 starts rotating at a low speed. MC1 (registration) is turned ON after formation of a paper loop by the registration roller, thus writing the image on the back side.

c. ADU lock control

The ADU handle is locked by SD9 (ADU lock). PS47 (ADU handle) detects the handle position to determine whether the handle is locked or released.

2. Signals

a. Input signals

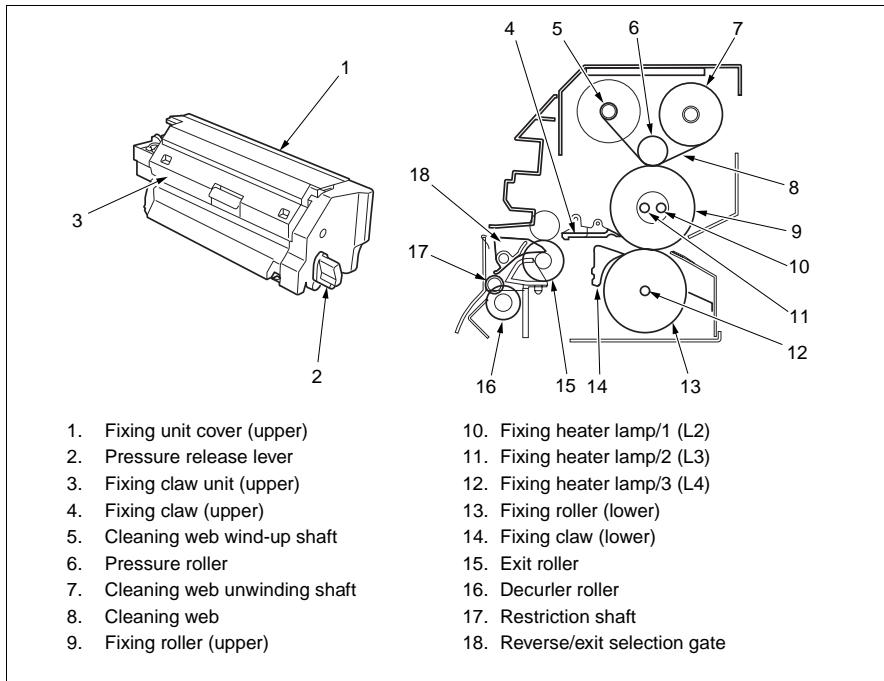
- (1) ADU_JAM (PS41 to ADUSDB)
Detection signal of paper passage from exit of ADU conveyance roller 1
[L]: Detected.
[H]: Not detected.
- (2) HD_PS (PS47 to ADUDB)
ADU handle position detection signal
[H]: Handle is released.
- (3) ADUCR_PS (PS48 to ADUDB)
Detection signal of paper passage from exit of ADU conveyance roller 2
[L]: Detected.
[H]: Not detected.
- (4) ADUDN_PS (PS49 to ADUDB)
Detection signal of paper passage from exit of ADU conveyance roller 3
[L]: Detected.
[H]: Not detected.

b. Output signals

- (1) LOCK_SD (ADUDB to SD9)
SD9 (ADU lock) drive signal
[L]: SD9 ON
[H]: SD9 OFF
- (2) ADUDN_MC (ADUDB to MC2)
MC2 (ADU deceleration) drive signal
[L]: MC2 ON
[H]: MC2 OFF
- (3) ADUCR_MC (ADUDB to MC13)
MC13 (ADU conveyance) drive signal
[L]: MC13 ON
[H]: MC13 OFF

FIXING UNIT

[1] Composition



[2] Mechanisms

Mechanism	Method
Fixing	Pressure + Heat roller
Heat source *1	Heater lamp(Upper rollers: Two, Lower roller: One)
Cleaning *2	Upper roller: Cleaning web (containing silicon oil)
Upper roller	Aluminum + Teflon coating
Lower roller	Silicon rubber + PFA tube
Separation	Separation claws (six upper and three lower claws)
Temperature detection	Upper roller: - Noncontact type thermistor (for control) TH1 - Contact type thermistor (for fault detection) TH2
Overheat protection	Upper roller: - Noncontact type thermostat (for fault detection) TS1 Lower roller: - Noncontact type thermostat (for fault detection) TS2
Neutralizing	Neutralizing brush
Pressure release	Pressure release shaft and spring
Exit path selection	Reverse/exit selection gate
Decurler *3	Decurler roller + Restriction shaft
Jam detection *4	Jam detection plate + Actuator + Photo sensor

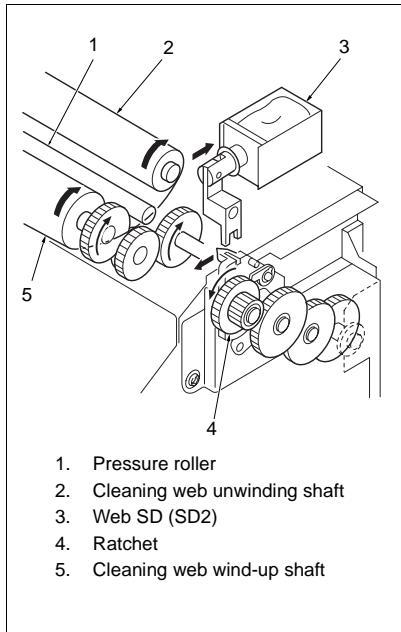
FIXING UNIT

***1 Fixing heater lamps**

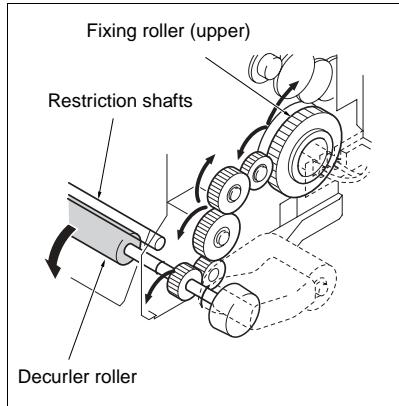
Two halogen lamps are used for the fixing upper roller and one halogen lamp is used for the fixing lower roller to reduce the warm-up time and ensure reliable fixing.

***2 Cleaning**

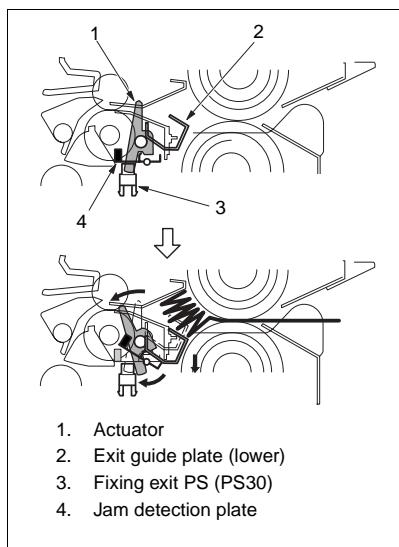
Cleaning web is used to clean the fixing upper roller. The web SD (SD2) in the main body turns ON/OFF to drive the cleaning web wind-up shaft via the ratchet mechanism and gears, thus supplying cleaning web from the cleaning web unwinding shaft. SD2 is controlled according to the copy count, and cleaning web supplied about 0.025 to 0.05 mm/copy. Cleaning web containing silicon oil is pressed against the fixing roller (upper) by the pressure roller.

***3 Decurler**

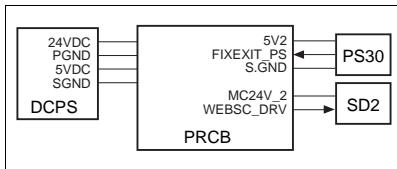
The paper guided by the reverse/exit selection gate is decurled while it passes between the decurler roller and restriction shafts. The decurler roller is driven by the fixing roller (upper) via gears.

***4 Jam detection**

When a jam occurs in the fixing exit section, the paper exit guide plate (lower) is pressed down, causing the fixing exit PS (PS30) to detect a jam via the jam detection plate and actuator.



[3] M16 (Web Drive) Control



SD2 (web) is controlled by PRCB (printer control board). The related signal is PS30 (fixing exit).

1. Operation

When PS30 is turned ON by passage of paper, SD2 is controlled by PRCB (printer control board) according to the fixing web counter value. The fixing web counter value is incremented together with the total counter in exit section of the main body. The relationship between the fixing web counter values and SD2 (web) is as follows:

Fixing web counter value	SD2 drive count
1 to 12,000	Once per copy
12,001 to 30,000	Once per copy *1
30,001 to 60,000	Once per copy *2
60,001 to 125,000	Once per 2 copies
125,0001 to 260,000	Once per 3 copies
260,001 or more	Once per 6 copies

- *1 SD2 is turned ON once per copy, but is not turned ON once per six copies.
- *2 SD2 is turned ON once per copy, but is not turned ON once per three copies.

2. Signals

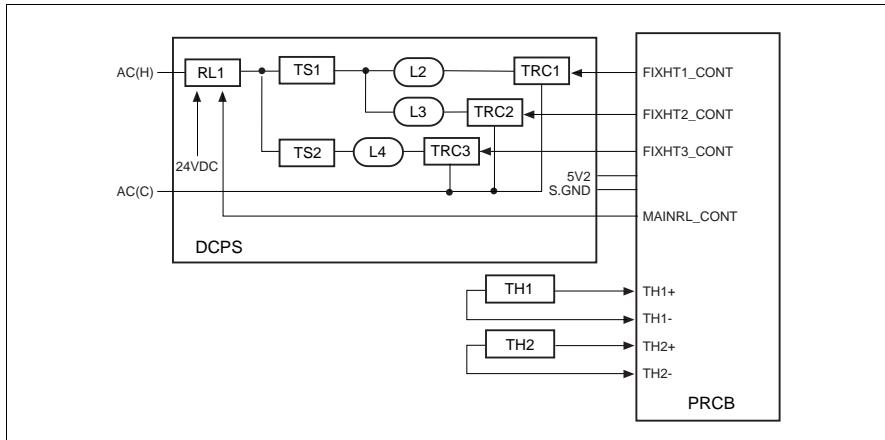
a. PRCB input signal

- (1) FIXEXIT_PS (PS30 to PRCB)
Detection signal of passage of paper at fixing unit exit
[L]: Detected.
[H]: Not detected.

b. PRCB output signal

- (1) WEBSC_DRV (PRCB to SD2)
SD2 (web) drive control signal
[L]: SD2 ON
[H]: SD2 OFF

[4] Fixing Temperature Control



The fixing roller (upper) is heated by L2 (fixing heater lamp 1) and L3 (fixing heater lamp 2) and the fixing roller (lower) is heated by L4 (fixing heater lamp 3). The PRCB (printer control board) detects the temperature of the fixing roller (upper) using TH1 (fixing temperature sensor/1) TH2 (fixing temperature sensor/2) and controls L2 and L3 via DCPS (DC power supply unit).

1. Operation

a. Temperature control

The PRCB (printer control board) turns ON the fixing heater lamp circuit in DCPS as soon as the SW2 (sub power) is turned ON, holding L2 (fixing heater lamp/1), L3 (fixing heater lamp/2), and L4 (fixing heater lamp/3) lit until the fixing roller (upper) reaches the specified temperature. L2, L3 and L4 are turned ON/OFF under the control of the TRC1 (triac/1), TRC2 (triac/2) and TRC3 (triac/3).

b. Protection against abnormal temperature rise

Thermostats are used to prevent the temperature of the fixing rollers from rising abnormally. TS1 (thermostat/U) and TS2 (thermostat/L) are used for the fixing roller (upper/lower). As these thermostat are of the noncontact type, those do not touch the fixing roller (upper/lower).

The operating temperature of the thermostats are as follows:

TS1: Opens at 180°C
TS2: Opens at 110°C

2. Signals

a. PRCB input signals

- (1) TH1+,- (TH1 to PRCB)

Fixing roller (upper) temperature detection signal

This signal is used to control the temperature of the fixing roller (upper) and to detect abnormal temperature rise.

- (2) TH2+,- (TH2 to PRCB)

Fixing roller (upper) temperature detection signal

This signal is used to detect the fixing roller (upper) abnormal temperature rise.

b. PRCB output signals

- (1) FIXHT1_CONT (PRCB to DCPS)

L2 drive control signal

[L]: L2 ON

[H]: L2 OFF

- (2) FIXHT2_CONT (PRCB to DCPS)

L3 drive control signal

[L]: L3 ON

[H]: L3 OFF

- (3) FIXHT3_CONT (PRCB to DCPS)

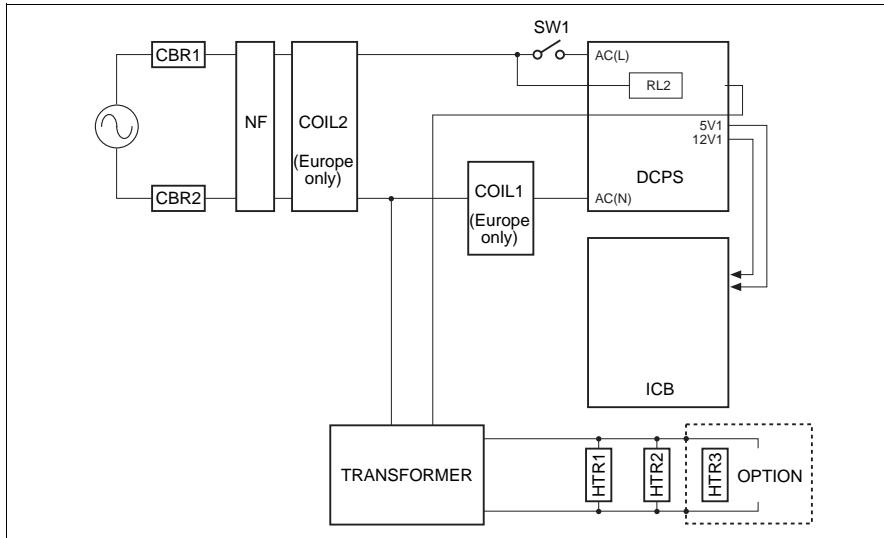
L4 drive control signal

[L]: L4 ON

[H]: L4 OFF

OTHER KINDS OF CONTROL

[1] Parts Energized when SW1 (Main Power) is OFF



1. Operation

If the power cord is plugged in the wall outlet, the following parts are energized regardless of whether SW1 (main power) is ON or OFF:

a. CBR1/2 (circuit breaker/1/2)

If an excessive current flows due to a short in an internal part or other factors, this breaker turns OFF to cut off the power to the machine.

b. NF (noise filter)

The noise filter is used to reduce the noise arriving through the power line.

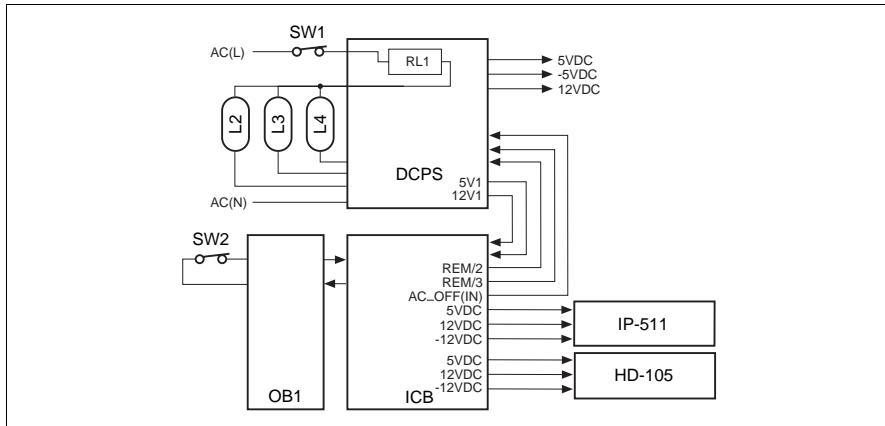
c. DCPS (DC power supply unit)

RL2 (heater relay) is turned ON to turn ON HTR1 (heater/1), HTR2 (heater/2), and HTR3 (drum heater (spare parts)).

d. Internal heaters

HTR1 (heater/1), HTR2 (heater/2), and HTR3 (drum heater (spare parts)) are energized irrespective whether SW1 (main power) is ON or OFF.

[2] Parts that Operate when SW1 (Main Power)/SW2 (Sub Power) is ON



1. Operation

a. Operation performed when SW1 (main power) is ON

When SW1 (main power) is turned ON, AC power is supplied to DCPS (DC power supply unit). As a result, DCPS supplies 5 VDC and 12 VDC to the status management and control circuit on ICB (image control board), HD-105, and IP-511. ICB supplies 5 VDC to OB1 (operation board/1).

b. Operation performed when SW2 (sub power) is ON

If SW2 (sub power) is turned ON when SW1 (main power) is already ON, DCPS supplies 24 VDC for driving various loads. Thus, all boards are energized and initialization of this machine starts.

(2) AC_OFF (IN) (ICB to DCPS)

RL1 (main relay) control signal

[L]: RL1 ON

[H]: RL1 OFF

2. Signals

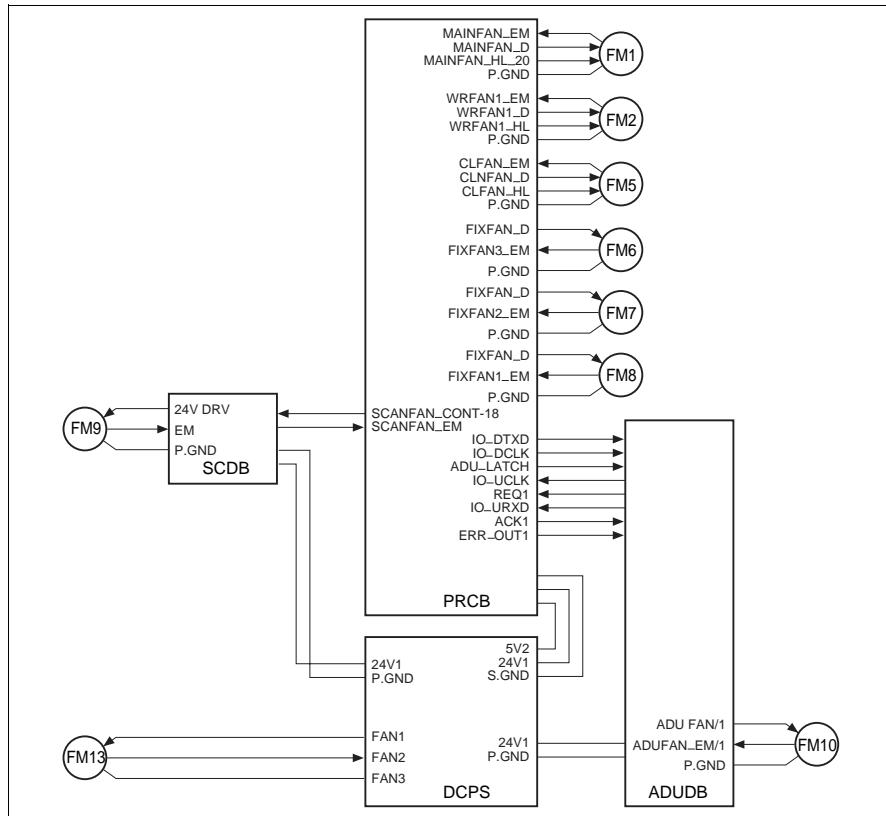
a. Output signals

(1) REM/2, /3 (ICB to DCPS)

The DC voltage output from DCPS (DC power supply unit) is controlled according to the combination of levels of two signals.

REM/2	REM/3	Output
H	H	5 V1, 12 V1
L	H	5 V1, 12 V1, 5 V2, 12 V2, 24 V1, -5 V1
L	L	5 V1, 12 V1, 5 V2, 12 V2, 24 V1, -5 V1, 24 V2

[3] Cooling Fan Control



FM1 (main body cooling/1), FM2 (write section cooling), FM5 (cleaner cooling), FM6 (paper exit /F), FM7 (paper exit/R), and FM8 (main cooling /2) are controlled by PRCB (printer control board) directly. FM9 (scanner cooling) is driven by SCDB (scanner drive board). FM10 (ADU reverse motor cooling) is driven by ADUDB (ADU drive board) and is controlled by PRCB. FM13 (power supply cooling) is driven by DCPS (DC power supply unit).

1. Operation

A 24 VDC motor is used for each cooling fan.

a. FM1 (main body cooling/1)

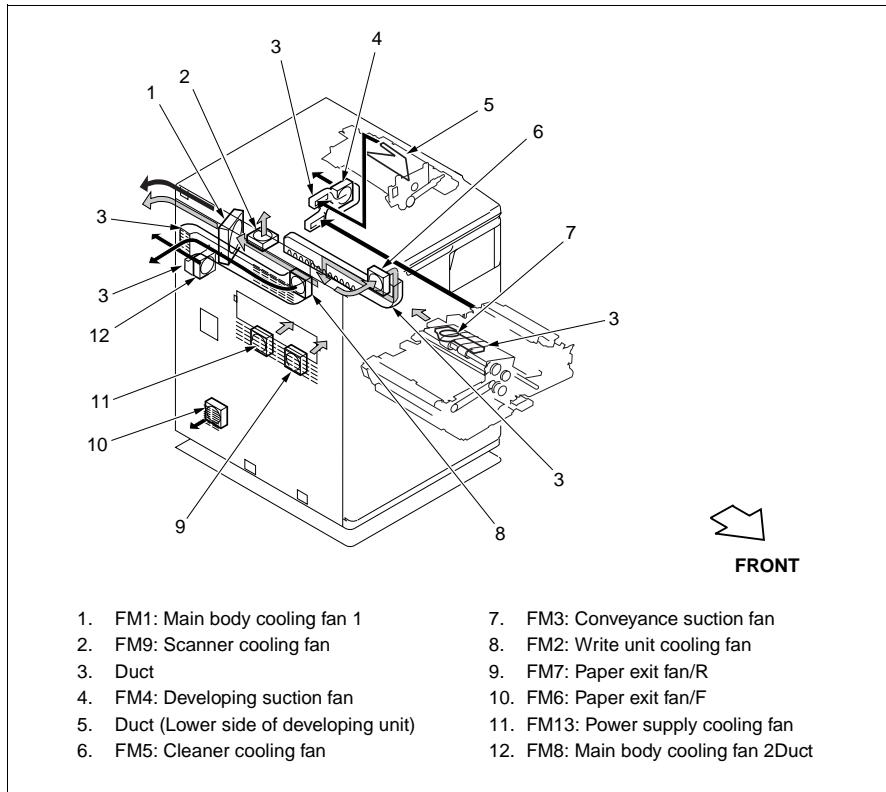
(1) ON timing

- During warm-up, starts rotating at a low speed when M2 (drum) is turned ON.
- During copying, held rotating at a high speed. When copying is completed, rotates at a high speed for the specified time according to the temperature in the machine, then starts rotating at a low speed.

OTHER KINDS OF CONTROL

- (2) OFF timing
- During warm-up, stops when M2 (drum) is turned OFF.
 - After completion of warm-up, not turned OFF until SW2 (sub power) is turned OFF.
- b. **FM2 (writing section cooling)**
- (1) ON timing
- Turned ON when M15 (polygon) is turned ON.
- During copying, held rotating at a high speed in sync with M2 (drum).
 - When not copying, held rotating at a low speed.
- (2) OFF timing
- Not turned OFF until SW2 (sub power) is turned OFF.
- c. **FM5 (cleaner cooling)**
- (1) ON timing
- Turned ON when SW2 (sub power) is turned ON.
- During coping, held rotating at a high speed.
 - When copying is completed, starts rotating at a low speed after a lapse of the specified time from turning OFF of M7 (paper exit). After this, switching between high- and low-speed operations takes place according to the temperature in the machine.
- (2) OFF timing
- Not turned OFF until SW2 (sub power) is turned OFF.
- d. **FM6 (paper exit/F), FM7 (paper exit/R), and FM8 (main cooling/2)**
- (1) ON timing
- At the start of copying, starts rotating at a constant speed.
- (2) OFF timing
- Turned OFF when M7 (paper exit) is turned ON.
- e. **FM9 (scanner cooling)**
- (1) ON timing
- Turned ON when L1 (exposure lamp) is turned ON.
- (2) OFF timing
- Turned OFF when L1 (exposure lamp) is turned OFF.
- f. **FM10 (ADU reverse motor cooling)**
- (1) ON timing
- Starts rotating at a constant speed when M9 (ADU reverse) is turned ON.
- (2) OFF timing
- Turned OFF when M9 (ADU reverse) is turned OFF.
- g. **FM13 (power supply cooling)**
- (1) ON timing
- Starts rotating at a constant speed when SW1 (main power) is turned ON.
- (2) OFF timing
- Not turned OFF until SW1 (main power) is turned OFF.

h. Fan air flow



2. Signals

a. Input signals

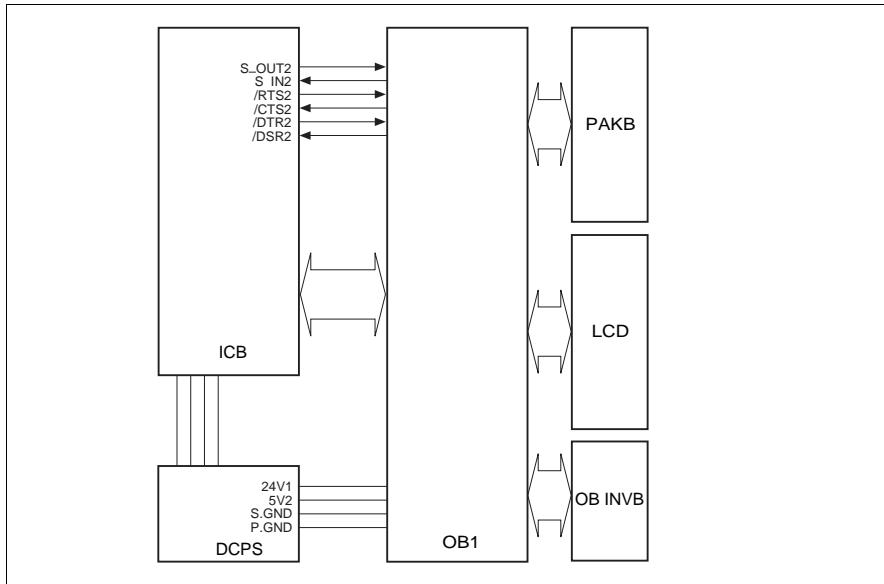
- (1) MAINFAN_EM (FM1 to PRCB)
FM1 (main body cooling/1) abnormality detection signal
[H]: Abnormality is detected.
- (2) WRFAN1_EM (FM2 to PRCB)
FM2 (writing section cooling) abnormality detection signal
[H]: Abnormality is detected.
- (3) CLFABN_EM (FM5 to PRCB)
FM5 (cleaner cooling) abnormality detection signal
[H]: Abnormality is detected.
- (4) FIXFAN3_EM (FM6 to PRCB)
FM6 (paper exit/F) abnormality detection signal
[L]: FM6 is normal.
[H]: FM6 is abnormal.
- (5) FIXFAN2_EM (FM7 to PRCB)
FM7 (paper exit/R) abnormality detection signal
[L]: FM7 is normal.
[H]: FM7 is abnormal.
- (6) FIXFAN1_EM (FM8 to PRCB)
FM8 (main cooling/2) abnormality detection signal
[L]: FM8 is normal.
[H]: FM8 is abnormal.
- (7) EM (FM9 to SCDB)
FM9 (scanner cooling) abnormality detection signal
[L]: FM9 is normal.
[H]: FM9 is abnormal.
- (8) ADUFAN_EM/1 (FM10 to PRCB)
FM10 (ADU reverse motor cooling) abnormality detection signal
[L]: FM10 is normal.
[H]: FM10 is abnormal.
- (9) FAN2 (FM13 to PRCB)
FM13 (power supply cooling) abnormality detection signal
[L]: FM13 is normal.
[H]: FM13 is abnormal.
- (10) SCANFAN_EM (SCDB to PRCB)
FM9 (scanner cooling) abnormality detection signal
[L]: FM9 is normal.
[H]: FM9 is abnormal.

b. Output signals

- (1) MAINFAN_D (PRCB to FM1)
FM1 (main body cooling/1) ON/OFF control signal
[L]: FM1 ON
[H]: FM1 OFF
- (2) MAINFAN_HL_20 (PRCB to FM1)
FM1 (main body cooling/1) rotational speed control signal
[L]: Low speed
[H]: High speed
- (3) WRFAN1_D (PRCB to FM2)
FM2 (writing section cooling) ON/OFF control signal
[L]: FM2 ON
[H]: FM2 OFF
- (4) WRFAN1_HL (PRCB to FM2)
FM2 (writing section cooling) rotational speed control signal
[L]: Low speed
[H]: High speed
- (5) CLNFAN_D (PRCB to FM5)
FM5 (cleaner cooling) ON/OFF control signal
[L]: FM5 ON
[H]: FM5 OFF
- (6) CLFFAN_D (PRCB to FM5)
FM5 (cleaner cooling) rotational speed control signal
[L]: Low speed
[H]: High speed
- (7) FIXFAN_D (PRCB to FM6)
FM6 (paper exit/F) rotational speed control signal
[L]: Low speed
[H]: High speed
- (8) FIXFAN_D (PRCB to FM7)
FM7 (paper exit/R) ON/OFF control signal
[L]: FM7 ON
[H]: FM7 OFF
- (9) FIXFAN_D (PRCB to FM8)
FM8 (main cooling/2) ON/OFF control signal
[L]: FM8 ON
[H]: FM8 OFF
- (10) 24V DRV (SCDB to FM9)
FM9 (scanner cooling) ON/OFF control signal
[L]: FM9 ON
[H]: FM9 OFF
- (11) ADU FAN/1 (ADUSDB to FM10)
FM10 (ADU reverse motor cooling) ON/OFF control signal

- [L]: FM10 ON
[H]: FM10 OFF
(12) FAN1 (DCPS to FM13)
[L]: FM13 ON
[H]: FM13 OFF
- (13) SCANFAN_CONT-18 (PRCB to SCDB)
FM9 (scanner cooling) ON/OFF control signal
[L]: FM9 ON
[H]: FM9 OFF

[4] Operation Panel Control



The operation panel consists of OB1 (operation board 1), PAKB (panel key board), and LCD (indicator board). The LCD has a backlight which is driven by OB INVb (OB inverter) and touch switches which correspond to the display messages.

The operation panel is controlled by the OB1 based on the serial data output from the ICB (image control board).

1. Operation

a. LED ON operation

The LED on the OB1 (operation board/1) is controlled by sub CPU of OB1 at the command of ICB (image control board).

b. LCD (indicator board) control

- (1) LCD (indicator board) display operation
The LCD (image control board) displays various information according to the 4-bit parallel data from ICB (image control board) via OB1 (operation board 1).
- (2) Backlight ON operation
The LCD (indicator board) has a backlight (cold cathode tube) to facilitate viewing. The backlight is driven by OB INVb (OB inverter), and controlled by the OB1 (operation board/1).
- (3) PAKB (panel key board) control
The LCD (indicator board) has PAKB (panel key board) to allow you to select an item displayed on the LCD directly. PAKB is controlled by OB1 (operation board/1).

2. Signals**a. Input signals**

- (1) S_IN2 (OB1 to ICB)

Serial data which informs ICB (image control board) of the operation state of OB1 (operation board/1).

- (2) /CTS2 (OB1 to ICB)

Signal which indicates that data can be sent from OB1 (operation board/1) to ICB (image control board)

When this signal is at the high level ([H]), ICB stops sending the S_OUT2 signal.

- (3) /DSR2 (OB1 to ICB)

Acknowledgment signal which is returned each time OB1 (operation board/1) receives one-byte data from ICB (image control board)

b. Output signals

- (1) S_OUT2 (ICB to OB1)

Serial data which informs OB1 (operation board /1) of the machine status that is known to ICB (image control board).

- (2) /RTS2 (ICB to OB1)

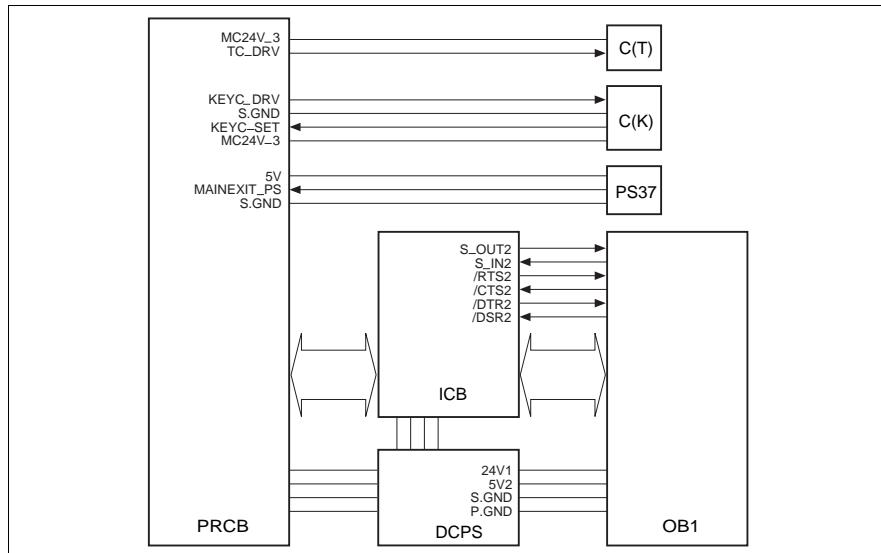
Signal which indicates that data can be sent from ICB (image control board) to OB1 (operation board/1).

When this signal is at the high level ([H]), OB1 stops sending the S_IN2 signal.

- (3) /DTR2 (ICB to OB1)

Acknowledgment signal which is returned each time ICB (image control board) receives one-byte data from OB1 (operation board/1).

[5] Counter Control



This machine has the following counters:

C (T): Total counter

C (K): Key counter

These counters are controlled by the PRCB (printer control board).

The related signal is PS37 (paper exit).

1. Operation

This machine counts copies using a software counter.

(1) Paper exit counter

The count increases by 1 each time PS37 (paper exit) which has been ON is turned OFF (two counts in the dual-sided document copy mode).
<Operation of each counter>

a. Copy quantity display counter on OB

Displays the count of ejected papers

b. C (K)

This counter counts in sync with the paper exit counter.

c. C (T)

This counter counts in sync with the paper exit counter.

2. Signals

a. PRCB input signals

(1) KSYC_SET (C (K) to PRCB)

Signal indicating the state of 24 V power supply to C (K)

[L]: 24V power is not supplied.

b. Output signals

(1) TC_DRV (PRCB to C (T))

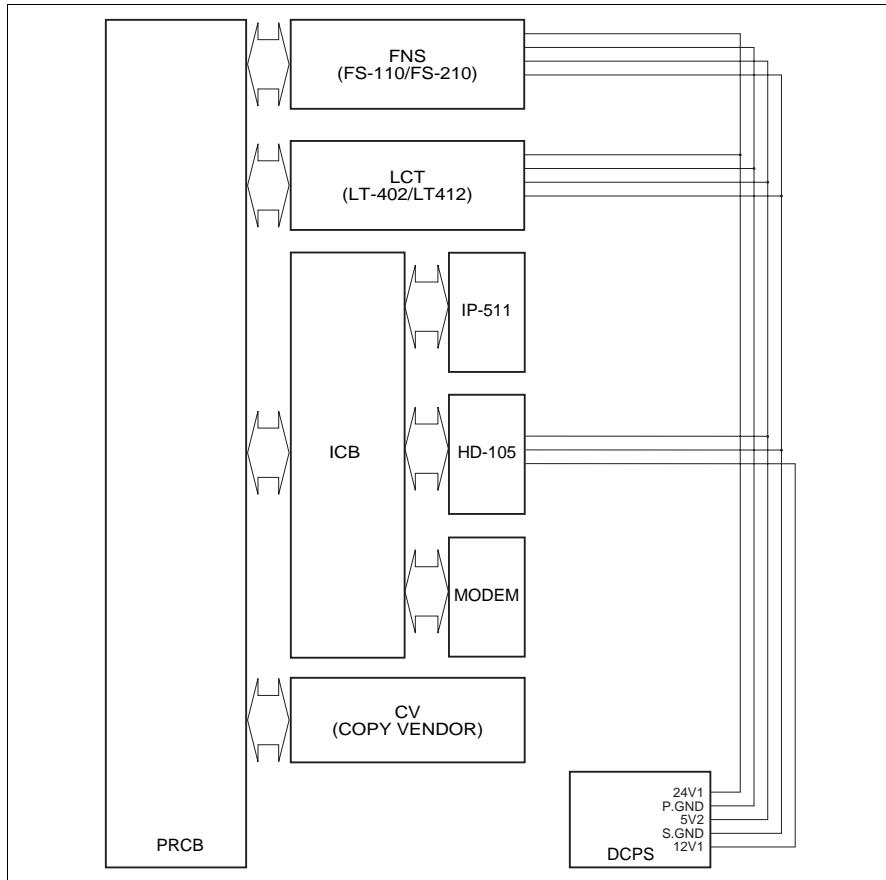
C (T) drive control signal

[L]: C (T) ON

(2) KEYC_DRV (PRCB to C (K))

C (K) drive control signal

[L]: C (K) ON

[6] Option Control

Options such as LCT and FNS are controlled by the PRCB (printer control board).

1. Operation

FNS incorporates CB which exchanges only control data with PRCB (printer control board) of the main body. LCT, FNS, and HDD are powered by the DCPS (DC power supply unit).

<Functions and output timings of signals for copy vendors>

Connector	Pin No.	Signal name	Description	Output timing	Signal type	
35	1	DV24V	Key counter power supply	Always	24 V, 300 mA	
	2	C(K) SIG	Key counter connection recognition	-	-	
	3	C(K) GND	Signal ground	-	-	
	4	C(K) DRIVE	Key counter signal count up	100-ms L-signal output after paper ejection	-	
	5	P. GND	Power ground	-	-	
36	1	Vendor Copy	Copying signal	Output from the moment START PRINT button is pressed to the moment paper ejection is completed.	Open collector 5 V, 200 mA	
	2	Vendor FEED	Paper feed signal	Common to main body tray. 100-ms L-signal output in sync with paper feed.		
	3	Paper size 0	Paper size signal	Output when paper size is changed.		
	4	Paper size 1				
	5	Paper size 2				
	6	Paper size 3				
	7	Vendor screen	Double-sided copy selection signal	Output when ADU mode is selected.		
	8	CPF SIG0	CPF mode selection signal	Output when copy or printer mode is selected.		
	9	CPF SIG1				
	10	P. GND	Power ground	-		

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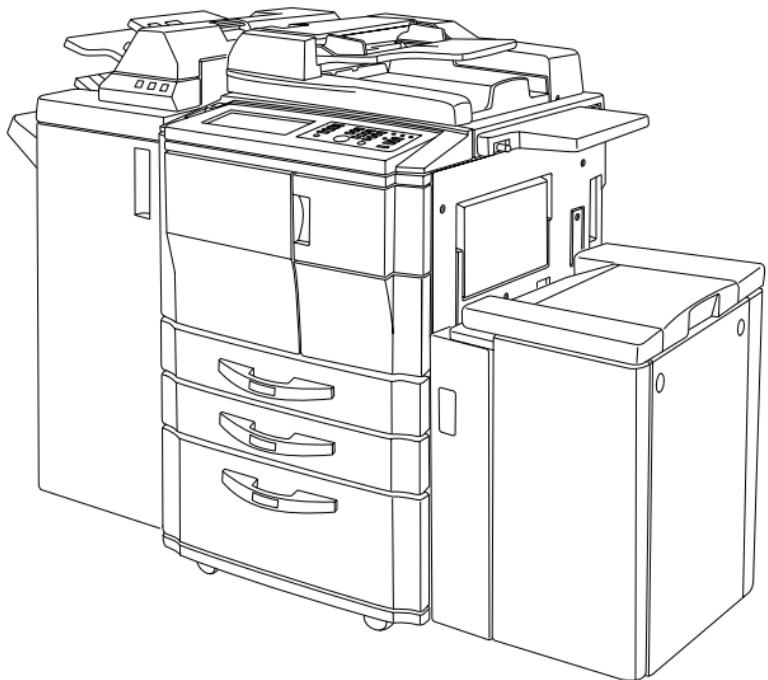


Service Manual

[Field Service]

The essentials of Imaging

Di551/Di650



**There are using both Official Options name and Popular Options name
in the Di551 / Di650 Service Manual and Option Service Manual.**

EDH	:	RADF
FN-6, FN-112, FN-113	:	FNS
C-403, C-404	:	LT & LCT
Cover Inserter B	:	PI
PK-2, PK-5	:	PK
ZK-2	:	PZ
In-System Writer	:	ISW

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1 DIS./ASSEMBLY

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3 SERVICE

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SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand them before doing service work.

IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this copier as well as the risk of damage to the copier, Minolta Corporation strongly recommends that all servicing be performed only by Minolta-trained service technicians.

Changes may have been made to this copier to improve its performance after this Service Manual was printed. Accordingly, Minolta Corporation does not warrant, either explicitly or implicitly, that the information contained in this Service Manual is complete and accurate.

The user of this Service Manual must assume all risks of personal injury and/or damage to the copier while servicing the copier for which this Service Manual is intended.

Therefore, this Service Manual must be carefully read before doing service work both in the course of technical training and even after that, for performing maintenance and control of the copier properly.

Keep this Service Manual also for future service.

DANGER, WARNING, AND CAUTION SYMBOLS AND EXPRESSIONS

In this Service Manual, each of three expressions "**△DANGER**," "**△WARNING**," and "**△CAUTION**" is defined as follows together with a symbol mark to be used in a limited meaning.

When servicing the copier, the relevant works (disassembling, reassembling, adjustment, repair, maintenance, etc.) need to be conducted with utmost care.



DANGER :Action having a high possibility of suffering death or serious injury



WARNING :Action having a possibility of suffering death or serious injury



CAUTION :Action having a possibility of suffering a slight wound, medium trouble, and property damage

Symbols used for important warning items are defined as follows:

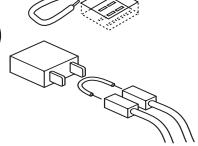
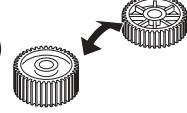


SAFETY WARNINGS

[1] MODIFICATIONS NOT AUTHORIZED BY MINOLTA

Minolta copiers are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

Copier design is a highly complicated and delicate process where numerous mechanical, physical, and electrical aspects have to be taken into consideration, with the aim of arriving at proper tolerances and safety factors. For this reason, unauthorized modifications involve a high risk of degradation in performance and safety. Such modifications are therefore strictly prohibited. The points listed below are not exhaustive, but they illustrate the reasoning behind this policy.

⚠ PROHIBITED ACTIONS:	
• Using any cables or power cord not specified by Minolta.	 
• Using any fuse or thermostat not specified by Minolta. Safety will not be assured, leading to a risk of fire and injury.	 
• Disabling fuse functions or bridging fuse terminals with wire, metal clips, solder or similar object.	 
• Disabling relay functions (such as wedging paper between relay contacts)	 
• Disabling safety functions (interlocks, safety circuits, etc.) Safety will not be assured, leading to a risk of fire and injury.	
• Making any modification to the copier unless instructed by Minolta	
• Using parts not specified by Minolta	 

[2] CHECKPOINTS WHEN PERFORMING ON-SITE SERVICE

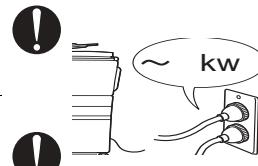
Minolta copiers are extensively tested before shipping, to ensure that all applicable safety standards are met, in order to protect the customer and customer engineer (hereafter called the CE) from the risk of injury. However, in daily use, any electrical equipment may be subject to parts wear and eventual failure. In order to maintain safety and reliability, the CE must perform regular safety checks.

1. Power Supply

⚠ WARNING: Wall Outlet

- Check that mains voltage is as specified. Plug the power cord into the dedicated wall outlet with a capacity greater than the maximum power consumption.
If excessive current flows in the wall outlet, fire may result.

- If two or more power cords can be plugged into the wall outlet, the total load must not exceed the rating of the wall outlet.
If excessive current flows in the wall outlet, fire may result.



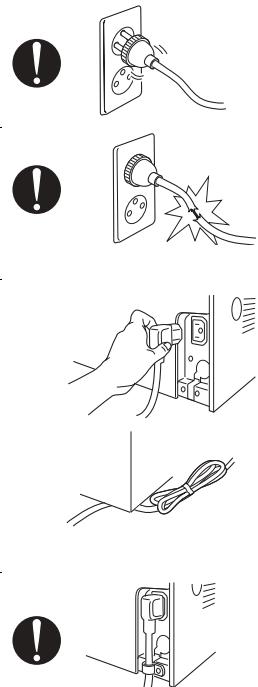
⚠ WARNING: Power Plug and Cord

- Make sure the power cord is plugged in the wall outlet securely.
Contact problems may lead to increased resistance, overheating, and the risk of fire.

- Check whether the power cord is damaged. Check whether the sheath is damaged.
If the power plug, cord, or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by Minolta. Using the damaged power cord may result in fire or electric shock.

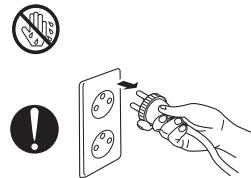
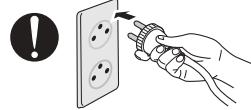
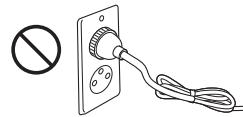
- When using the power cord (inlet type) that came with this copier, be sure to observe the following precautions:
 - a. Make sure the copier-side power plug is securely inserted in the socket on the rear panel of the copier.
Secure the cord with a fixture properly.
 - b. If the power cord or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by Minolta.
If the power cord (inlet type) is not connected to the copier securely, a contact problem may lead to increased resistance, overheating, and risk of fire.

- Check whether the power cord is not stepped on or pinched by a table and so on.
Overheating may occur there, leading to a risk of fire.



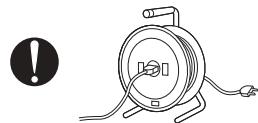
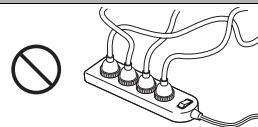
⚠ WARNING: Power Plug and Cord

- Do not bundle or tie the power cord.
Overheating may occur there, leading to a risk of fire.
- Check whether dust is collected around the power plug and wall outlet.
Using the power plug and wall outlet without removing dust may result in fire.
- Do not insert the power plug into the wall outlet with a wet hand.
The risk of electric shock exists.
- When unplugging the power cord, grasp the plug, not the cable.
The cable may be broken, leading to a risk of fire and electric shock.



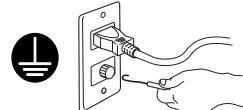
⚠ WARNING: Wiring

- Never use multi-plug adapters to plug multiple power cords in the same outlet.
If used, the risk of fire exists.
- When an extension cord is required, use a specified one.
Current that can flow in the extension cord is limited, so using a too long extension cord may result in fire.
Do not use an extension cable reel with the cable taken up. Fire may result.



⚠ WARNING: Ground Lead

- Check whether the copier is grounded properly.
If current leakage occurs in an ungrounded copier, you may suffer electric shock while operating the copier. Connect the ground lead to one of the following points:
 - a. Ground terminal of wall outlet
 - b. Ground terminal for which Class D work has been done



⚠ WARNING: Ground Lead

- Pay attention to the point to which the ground lead is connected.
Connecting the ground lead to an improper point such as the points listed below results in a risk of explosion and electric shock:
 - a. Gas pipe (A risk of explosion or fire exists.)
 - b. Lightning rod (A risk of electric shock or fire exists.)
 - c. Telephone line ground (A risk of electric shock or fire exists in the case of lightning.)
 - d. Water pipe or faucet (It may include a plastic portion.)



2. Installation Requirements

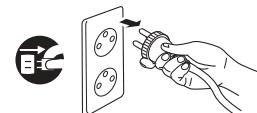
⚠ WARNING: Prohibited Installation Place

- Do not place the copier near flammable materials such as curtains or volatile materials that may catch fire.
A risk of fire exists.
- Do not place the copier in a place exposed to water such as rain water.
A risk of fire and electric shock exists.



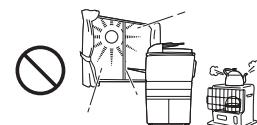
⚠ WARNING: Nonoperational Handling

- When the copier is not used over an extended period of time (holidays, etc.), switch it off and unplug the power cord.
Dust collected around the power plug and outlet may cause fire.



⚠ CAUTION: Temperature and Humidity

- Do not place the copier in a place exposed to direct sunlight or near a heat source such as a heater.
A risk of degradation in copier performance or deformation exists.
Do not place the copier in a place exposed to cool wind.
Recommended temperature and humidity are as follows:
Temperature: 10°C to 30°C
Humidity: 10% to 80% (no dew condensation)
Avoid other environments as much as possible.



⚠ CAUTION: Ventilation

- Do not place the copier in a place where there is much dust, cigarette smoke, or ammonia gas.
Place the copier in a well ventilated place to prevent machine problems and image faults.



! CAUTION: Ventilation

- The copier generates ozone gas during operation, but it is not sufficient to be harmful to the human body.

If a bad smell of ozone is present in the following cases, ventilate the room.

- When the copier is used in a poorly ventilated room
- When taking a lot of copies
- When using multiple copiers at the same time

**! CAUTION: Vibration**

- When installing the copier, read the Installation Guide thoroughly. Be sure to install the copier in a level and sturdy place.

Constant vibration will cause problems.



- Be sure to lock the caster stoppers.

In the case of an earthquake and so on, the copier may slide, leading to a injury.

! CAUTION: Inspection before Servicing

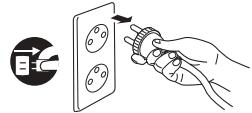
- Before conducting an inspection, read all relevant documentation (Service Manual, technical notices, etc.) and proceed with the inspection following the prescribed procedure, using only the prescribed tools. Do not make any adjustment not described in the documentation.

If the prescribed procedure or tool is not used, the copier may break and a risk of injury or fire exists.



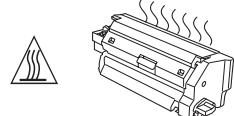
- Before conducting an inspection, be sure to disconnect the power plugs from the copier and options.

When the power plug is inserted in the wall outlet, some units are still powered even if the POWER switch is turned OFF. A risk of electric shock exists.



- The area around the fixing unit is hot.

You may get burnt.

**! DANGER: Work Performed with the Copier Powered**

- Take every care when making adjustments or performing an operation check with the copier powered.

If you make adjustments or perform an operation check with the external cover detached, you may touch live or high-voltage parts or you may be caught in moving gears or the timing belt, leading to a risk of injury.



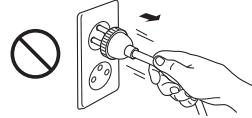
! DANGER: Work Performed with the Copier Powered

- Take every care when servicing with the external cover detached.
High-voltage exists around the drum unit. A risk of electric shock exists.



! WARNING: Safety Checkpoints

- Check the exterior and frame for edges, burrs, and other damages.
The user or CE may be injured.
- Do not allow any metal parts such as clips, staples, and screws to fall into the copier.
They can short internal circuits and cause electric shock or fire.
- Check wiring for squeezing and any other damage.
Current can leak, leading to a risk of electric shock or fire.
- When disconnecting connectors, grasp the connector, not the cable.
(Specifically, connectors of the AC line and high-voltage parts)
Current can leak, leading to a risk of electric shock or fire.
- Carefully remove all toner remnants and dust from electrical parts and electrode units such as a charging corona unit.
Current can leak, leading to a risk of copier trouble or fire.
- Check high-voltage cables and sheaths for any damage.
Current can leak, leading to a risk of electric shock or fire.
- Check electrode units such as a charging corona unit for deterioration and sign of leakage.
Current can leak, leading to a risk of trouble or fire.
- Before disassembling or adjusting the write unit incorporating a laser, make sure that the power cord has been disconnected.
The laser light can enter your eye, leading to a risk of loss of eyesight.
- Do not remove the cover of the write unit. Do not supply power with the write unit shifted from the specified mounting position.
The laser light can enter your eye, leading to a risk of loss of eyesight.
- When replacing a lithium battery, replace it with a new lithium battery specified in the Parts Guide Manual. Dispose of the used lithium battery using the method specified by local authority.
Improper replacement can cause explosion.



⚠ WARNING: Safety Checkpoints

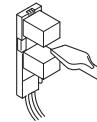
- After replacing a part to which AC voltage is applied (e.g., optical lamp and fixing lamp), be sure to check the installation state.

A risk of fire exists.



- Check the interlock switch and actuator for loosening and check whether the interlock functions properly.

If the interlock does not function, you may receive an electric shock or be injured when you insert your hand in the copier (e.g., for clearing paper jam).



- Make sure the wiring cannot come into contact with sharp edges, burrs, or other pointed parts.

Current can leak, leading to a risk of electric shock or fire.



- Make sure that all screws, components, wiring, connectors, etc. that were removed for safety check and maintenance have been reinstalled in the original location. (Pay special attention to forgotten connectors, pinched cables, forgotten screws, etc.)

A risk of copier trouble, electric shock, and fire exists.



⚠ HANDLING OF MATERIALS FOR SERVICING

- Unplug the power cord from the wall outlet.

Drum cleaner (isopropyl alcohol) and roller cleaner (acetone-based) are highly flammable and must be handled with care. A risk of fire exists.



- Do not replace the cover or turn the copier ON before any solvent remnants on the cleaned parts have fully evaporated.

A risk of fire exists.



- Use only a small amount of cleaner at a time and take care not to spill any liquid. If this happens, immediately wipe it off.

A risk of fire exists.



- When using any solvent, ventilate the room well.

Breathing large quantities of organic solvents can lead to discomfort.



**DANGER: HANDLING OF MATERIALS FOR SERVICING**

- Toner and developer are not harmful substances, but care must be taken not to breathe excessive amounts or let the substances come into contact with eyes, etc. It may be stimulative.

If the substances get in the eye, rinse with plenty of water immediately.

When symptoms are noticeable, consult a physician.



- Never throw the used cartridge and toner into fire.

You may be burned due to dust explosion.

**[3] CONCLUSION**

1. Safety of users and customer engineers depends highly on accurate maintenance and administration. Therefore, safety can be maintained by the appropriate daily service work conducted by the customer engineer.
2. When performing service, each copier on the site must be tested for safety. The customer engineer must verify the safety of parts and ensure appropriate management of the equipment.

SAFETY INFORMATION**IMPORTANT INFORMATION**

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States.

This copier is certified as a "Class 1" laser product under the U.S.

Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside this copier is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

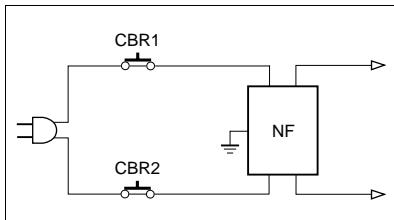
SAFETY CIRCUITS

This machine is provided with the following safety circuits to prevent machine faults from resulting in serious accidents.

- [1] Overall protection circuit
- [2] L2 and L3 (fixing heater lamps) overheating prevention circuit

These safety circuits are described below to provide the service engineer with a renewed awareness of them in order to prevent servicing errors that may impair their functions.

[1] Overall Protection Circuit



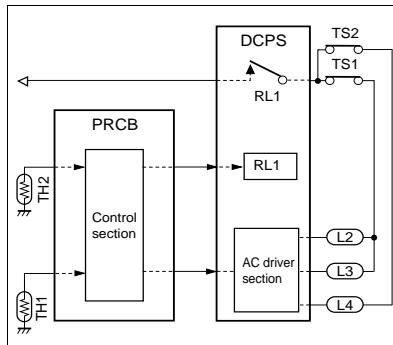
1. Protection by CBR1 and CBR2 (circuit breakers)

CBR1 and CBR2 interrupt the AC line instantaneously when an excessive current flows due to a short in the AC line.

⚠ CAUTION:

The CBR1 and CBR2 functions must not be deactivated under any circumstances.

- [2] Protection by L2, L3 and L4 (fixing heater lamps) overheating prevention circuit



1. Protection by software

The output voltage from TH1 (fixing temperature sensor 1) is read by the CPU. If this voltage is abnormal, L2 (fixing heater lamp 1), L3 (fixing heater lamp 2), L4 (fixing heater lamp 3) and RL1 (main relay) are turned OFF.

⚠ CAUTION:

Do not change the gap between the roller and TH1. When replacing TH1, check the specified mounting dimensions. The RL1 function must not be deactivated under any circumstances.

2. Protection by the hardware circuit

The output voltages from TH1 and TH2 (fixing temperature sensors) are compared with the abnormality judgment reference value in the comparator circuit. If the output voltage from TH1 or TH2 exceeds the reference value, L2 (fixing heater lamp 1), L3 (fixing heater lamp 2), L4 (fixing heater lamp 3) and RL1 (main relay) are turned OFF in hardware means.

⚠ CAUTION:

Periodically check the TH2 face contact-ing the roller, and replace TH2 if any abnormality is detected.

Since TH1 (fixing temperature sensor) face does not contact the roller, check the distance from the roller and the sensor orientation if any abnormality is detected.

The RL1 function must not be deactivated under any circumstances.

3. Protection by TS1 (thermostat/U) and TS2 (thermostat/L)

When the temperature of the fixing roller (upper/lower) exceeds the specified value, TSs are turned OFF, thus interrupting the power to L2 (fixing heater lamp/1), L3 (fixing heater lamp/2), and L4 (fixing heater lamp/3) directly.

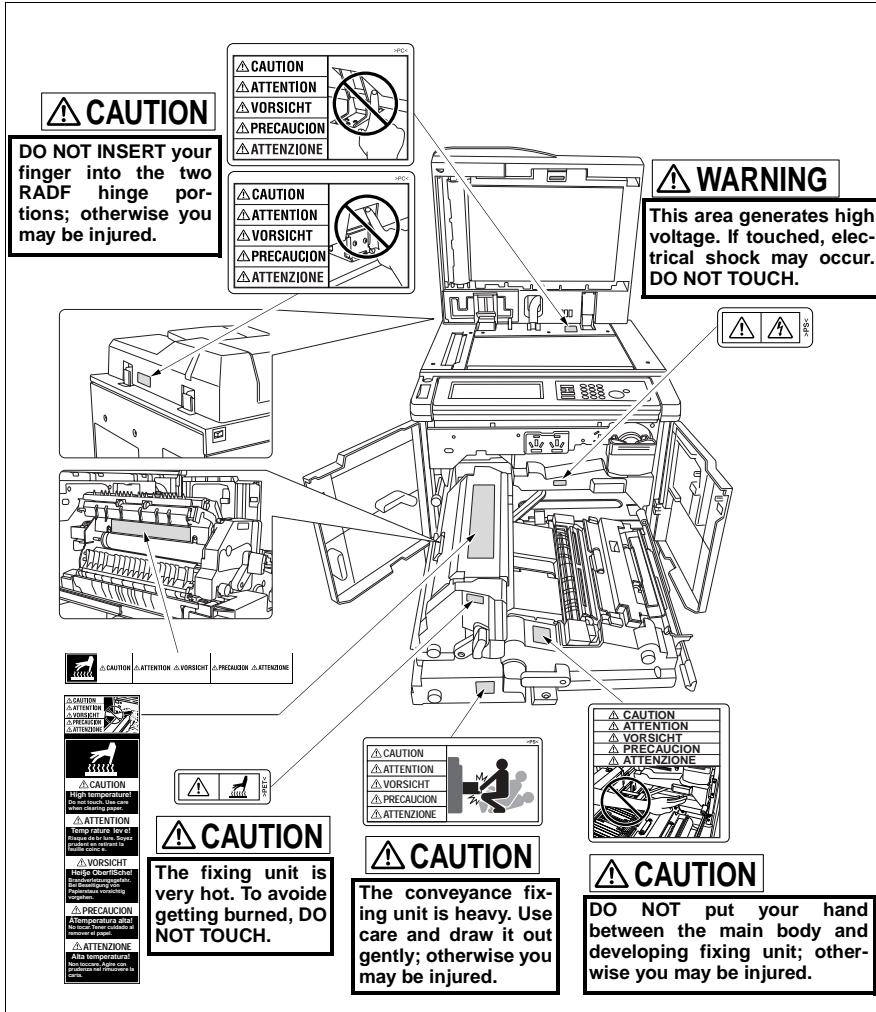
⚠ CAUTION:

Do not use any other electrical conductor in place of TS1 and TS2. Do not change the distance between the roller and TS (thermostat).

INDICATION OF WARNING ON THE MACHINE

Caution labels shown below are attached in some areas on/in the machine.

When accessing these areas for maintenance, repair, or adjustment, special care should be taken to avoid burns and electric shock.



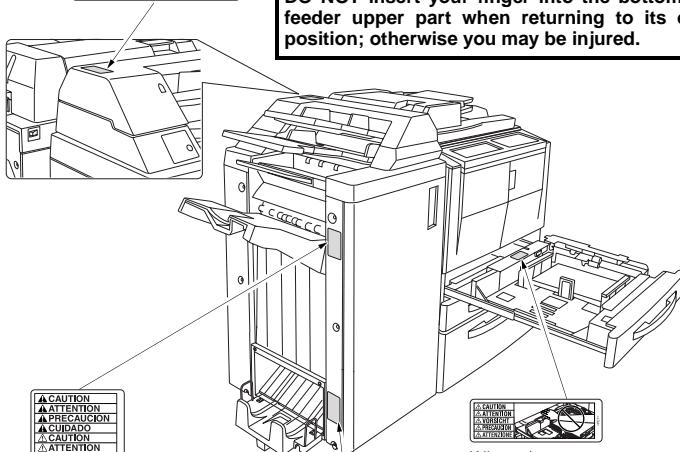
△ CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, Contact our Service Office.


CAUTION

DO NOT insert your finger into the bottom of the feeder upper part when returning to its original position; otherwise you may be injured.


CAUTION

Use care after opening the paper exit outlet. DO NOT put your hand into it; otherwise you may be injured.


CAUTION

Inside the lower paper exit outlet is the roller drive unit. DO NOT put your hand into it; otherwise you may be injured.


CAUTION

DO NOT put your hand between the main body and tray; otherwise you may be injured.

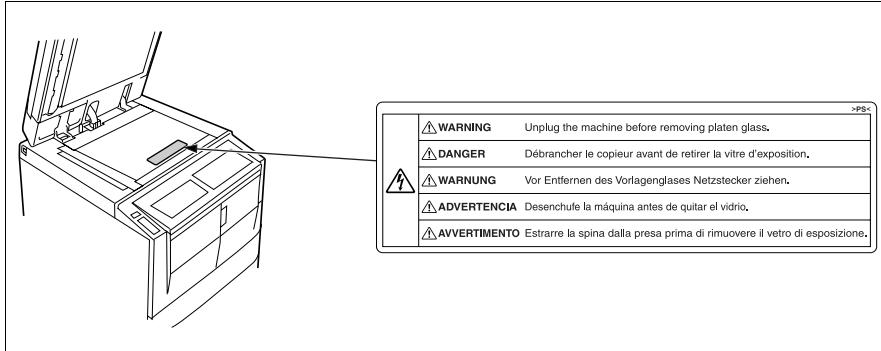
CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

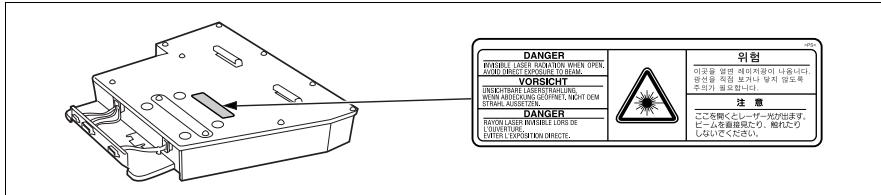
Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, Contact our Service Office.

SAFETY INFORMATION

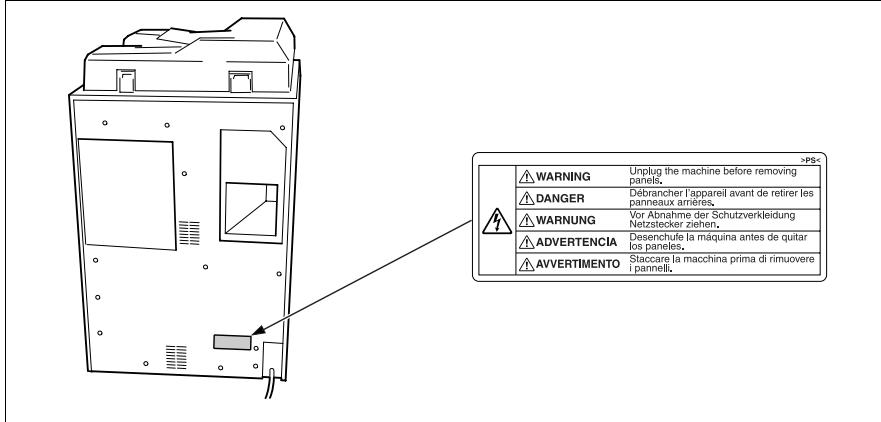
<SCANNER SECTION>



<WRITE UNIT>



<REAR COVER>



⚠ CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, Contact our Service Office.

1

DISASSEMBLY/ASSEMBLY

This section explains how to disassemble and reassemble the machine. When disassembling and reassembling the machine, follow the precautions given below.

1. Be sure the power cord has been unplugged from the wall outlet.
2. The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
3. Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
4. Do not operate the machine before installing all the disassembled parts completely.
5. Removal of some screws is prohibited in this section. Never loosen them.

EXTERNAL SECTION

[1] Replacing the Ozone Filter

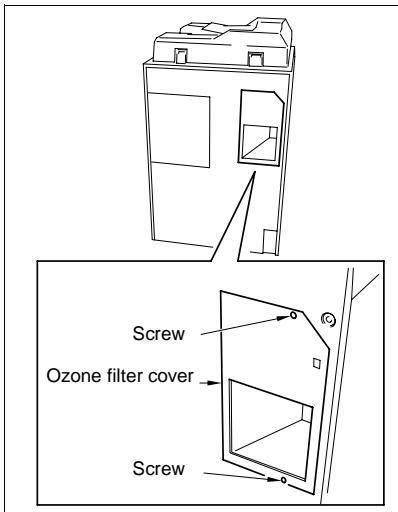
Caution:

Be sure the power cord has been unplugged from the wall outlet.

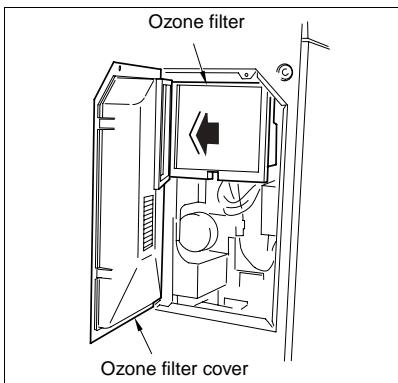
Caution: When replacing the ozone filter, insert it in the opening in the main body as far as it will go.

a. Procedure

- (1) Loosen two screws to remove the ozone filter cover.



- (2) Replace the ozone filter.



- (3) Reinstall the above parts following the removal steps in reverse.

[2] Replacing the Developing Suction Filter

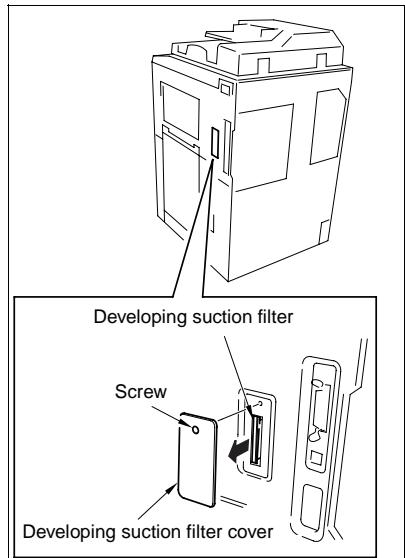
Caution:

Be sure the power cord has been unplugged from the wall outlet.

Caution: When replacing the developing suction filter, insert it in the opening in the main body as far as it will go.

a. Procedure

- (1) Loosen the screw to remove the developing suction filter cover.
- (2) Replace the developing suction filter.



- (3) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the developing suction filter, the filter-supporting material should face the back of the machine.

EXTERNAL SECTION

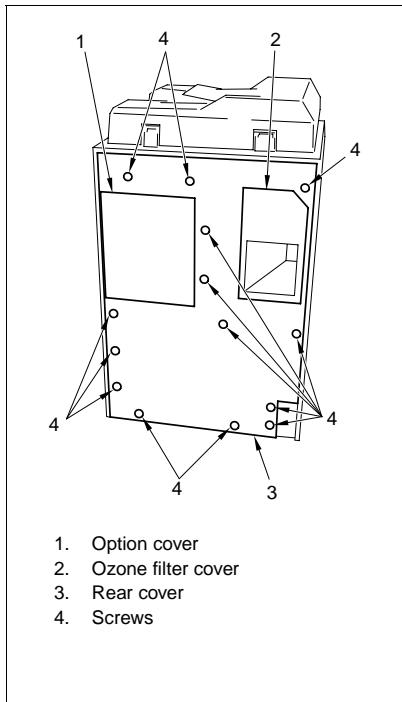
[3] Removing and Reinstalling the External Covers**⚠ Caution:**

Be sure the power cord has been unplugged from the wall outlet.

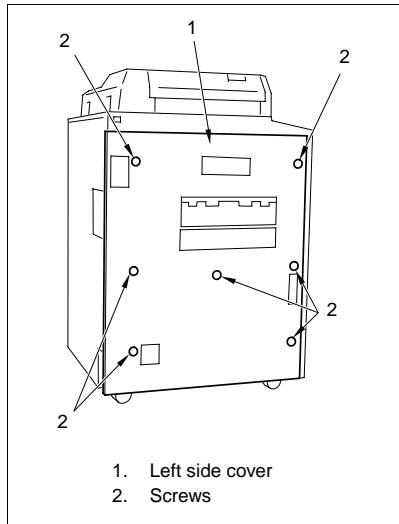
a. Procedure

- (1) Remove fourteen screws to detach the rear cover.

Caution: The ozone filter cover and the option cover detach together with the rear cover.



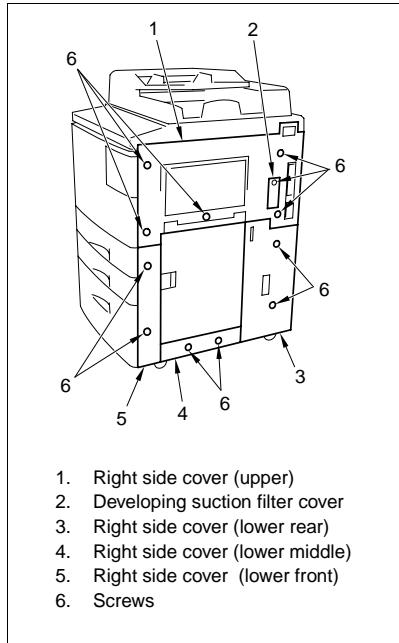
- (2) Remove seven screws to detach the left side cover.



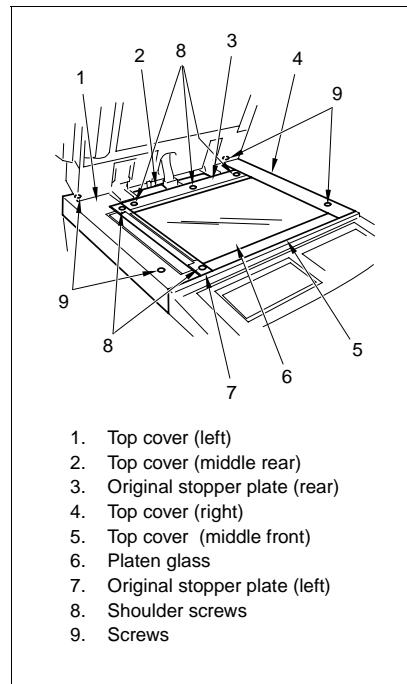
- (3) Loosen one screw and remove the developing suction filter cover.
- (4) Loosen five screws and detach the right side cover (upper).

Caution: The developing suction filter cover detaches together with the right side cover (upper).

- (5) Loosen two screws to detach the right side cover (lower front).
- (6) Loosen two screws to detach the right side cover (lower rear).
- (7) Loosen two screws to detach the right side cover (lower middle).



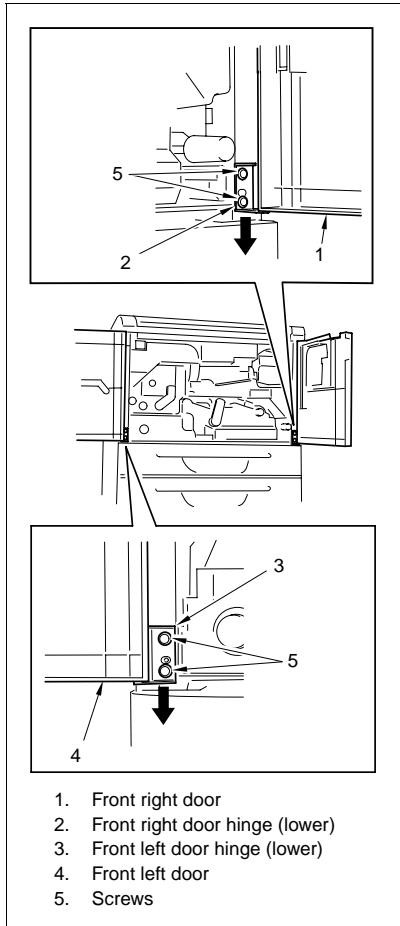
- (14) Remove the top cover (middle front) and top cover (middle rear).



- (8) Open the RADF.
- (9) Remove the two shoulder screws to remove the original stopper plate (left).
- (10) Remove the three shoulder screws to remove the original stopper plate (rear).
- (11) Remove the platen glass.
- (12) Remove two screws to detach the top cover (left).
- (13) Remove two screws to detach the top cover (right).

EXTERNAL SECTION

- (15) Open the front right door and front left door.
- (16) Remove two screws to remove the front right door hinge (lower) and front right door.
- (17) Remove two screws and remove the front left door hinge (lower) and the front left door.



- (18) Reinstall the above parts following the removal steps in reverse.

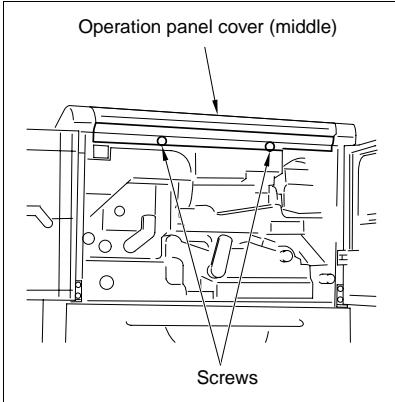
[4] Changing the Operation Panel Attachment Angle and Removing/Reinstalling

Caution:

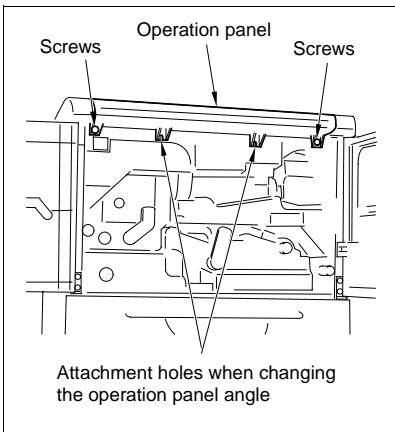
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Open the front left door and front right door.
- (2) Remove two screws to remove the operation panel cover (middle).



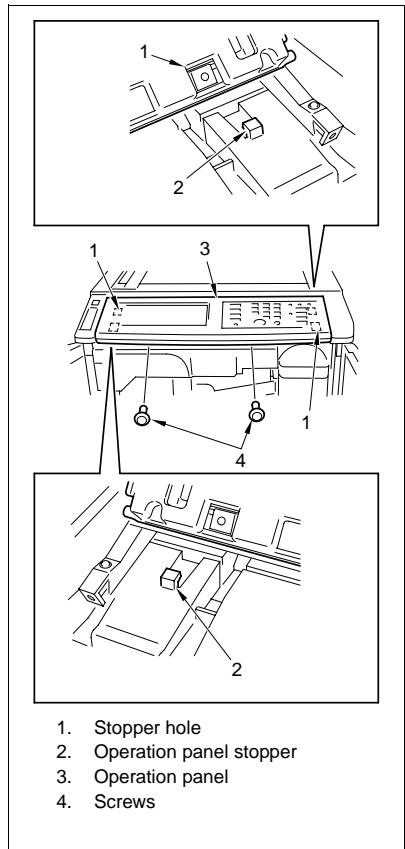
- (3) Remove two screws to unlock the operation panel.



- (4) When changing the operation panel attachment angle, align the operation panel stopper with the stopper hole at the front side on the bottom of the operation panel and fasten using two screws in the operation cover attachment holes.

Caution1: To remove the operation panel, skip this step and proceed to step (5).

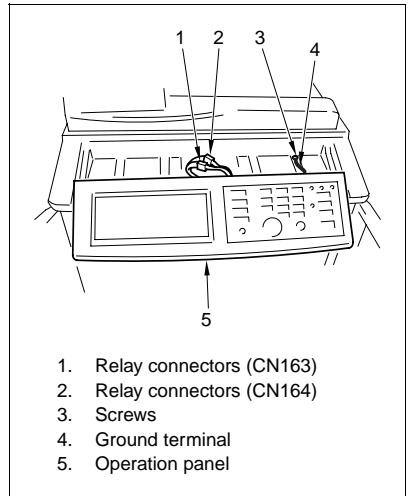
Caution2: When the attachment angle of the operation panel is changed, the operation panel cover and two screws will become unnecessary.



- (5) Remove the relay connectors (CN163, 164).

Caution: Each relay connector consist of two male sides and one female side. Be sure to remove only the male side (shown below).

- (6) Remove screws to remove the Ground terminal.
(7) Remove the operation panel.



- (8) Reinstall the above parts following the removal steps in reverse.

EXTERNAL SECTION

[5] Resetting the Circuit Breaker**⚠ Caution:**

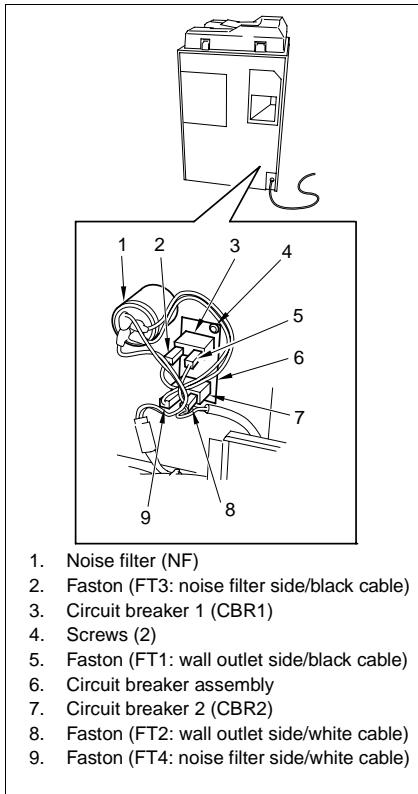
Be sure the power cord has been unplugged from the wall outlet.

⚠ Caution:

Connection of cables to circuit breaker 1 and 2 (CBR1, 2) must not be changed.

a. Procedure

- (1) Remove the rear cover.
- (2) Remove two screws and loosen the circuit breaker assembly.



- (3) Turn over the circuit breaker assemblies and press the reset button at the center of each circuit breaker.
- (4) Reinstall the above parts following the removal steps in reverse.

DRIVE SECTION

[1] Removing and Reinstalling the Drum Motor(M2)

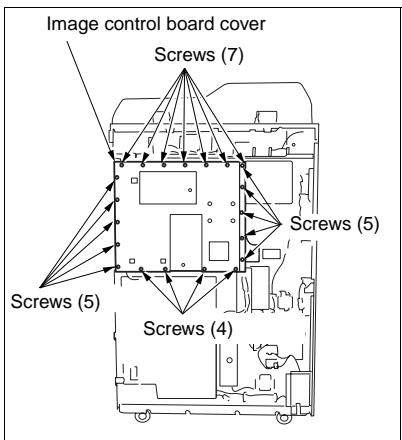
⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

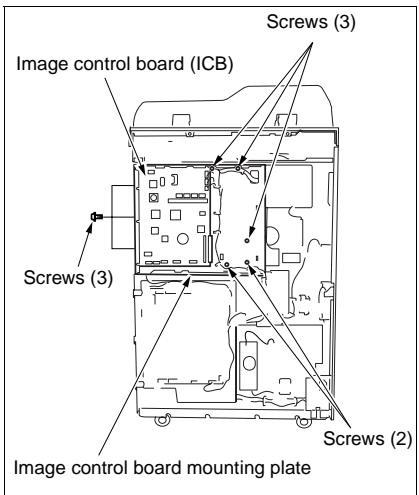
Caution: Be sure to draw the drum unit out of the main body before removing or reinstalling the drum drive motor. If you fail to draw out the drum unit, the cleaning blade may be damaged because the drum rotates when installing or removing the flywheel or gear.

a. Procedure

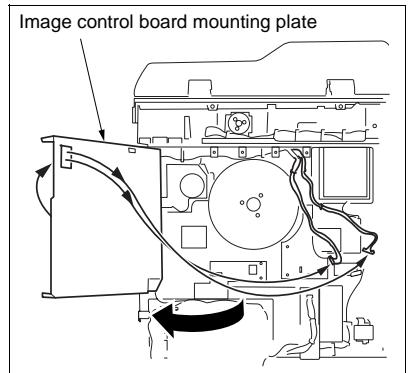
- (1) Draw the drum unit out of the main body. (See "DRUM UNIT.")
- (2) Remove the rear cover. (See "EXTERNAL SECTION.")
- (3) Remove the developing suction cover and right cover (top). (See "EXTERNAL SECTION.")
- (4) Remove twenty-one screws and remove the image control board cover.



- (5) Remove five screws at the rear and three screws on the right side and remove all connectors from the image control board (ICB).

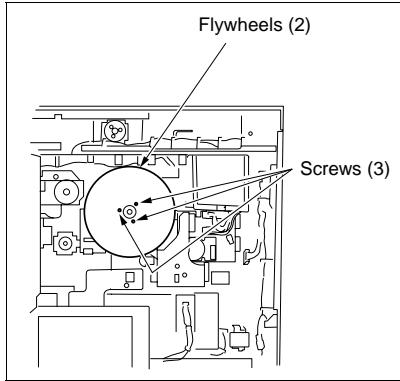


- (6) Remove each cable from wire guide.
- (7) Remove one cable from the scanner board and two cables from the write unit, draw them through the hole and open the image control board mounting plate.

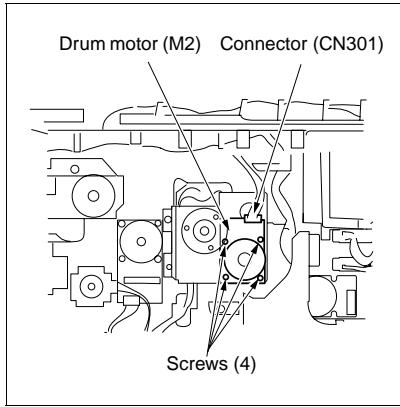


DRIVE SECTION

- (8) Remove three screws and remove the two flywheels.



- (9) Remove the connector (CN301).
 (10) Remove four screws and remove the drum motor (M2).



- (11) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Fixing Input Gear

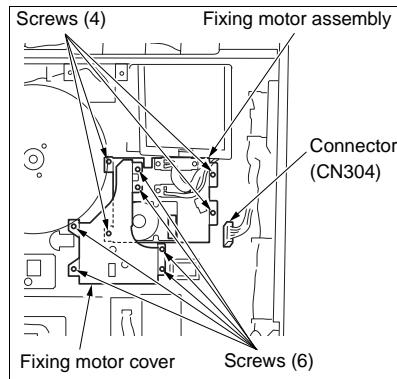
Caution:

Be sure the power cord has been unplugged from the wall outlet.

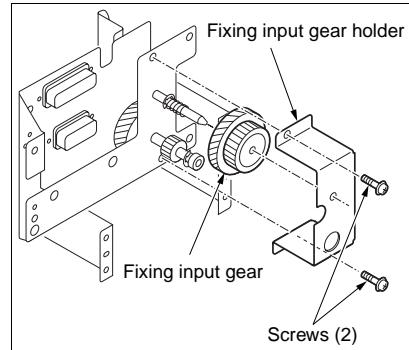
a. Procedure

- (1) Open the image control bard mounting board.
- (2) Remove six screws and remove the fixing motor cover.
- (3) Pull out the connector (CN304), remove four screws to remove the fixing motor assembly.

Caution: Hold the fixing motor assembly with your hand because it is connected to the main body with cable.



- (4) Remove two screws to remove the fixing input gear holder.
- (5) Pull out the fixing input gear from the shaft.

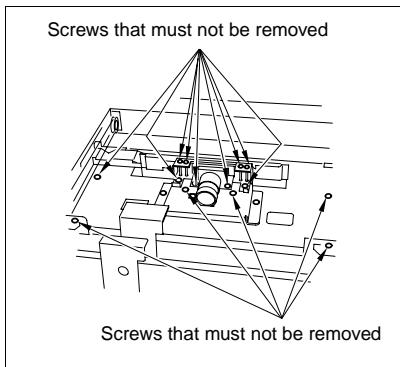


- (6) Reinstall the above parts following the removal steps in reverse.

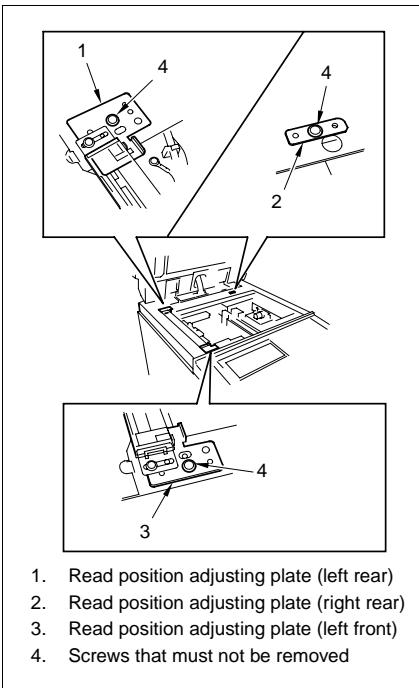
SCANNER SECTION

[1] Screws that Must not be Removed

a. 14 screws securing the CCD unit



b. Read position adjusting plate screw (1 each)



[2] Removing and Reinstalling the CCD Unit

Caution:

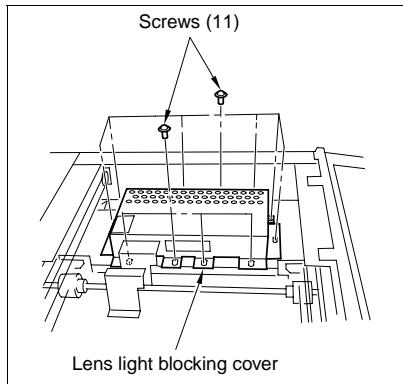
Be sure the power cord has been unplugged from the wall outlet.

Caution1: Be sure to adjust the image after installing the CCD unit (See "ADJUSTMENTS.")

Caution2: When disconnecting or reconnecting connectors from / to the AD converter board, be careful not to place any stress on the board.

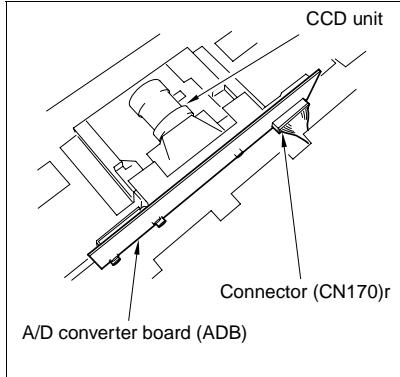
a. Procedure

- (1) Remove the right side cover (top), left side cover, original stopper plates (left and rear), platen glass and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove eleven screws to remove the lens light blocking cover.

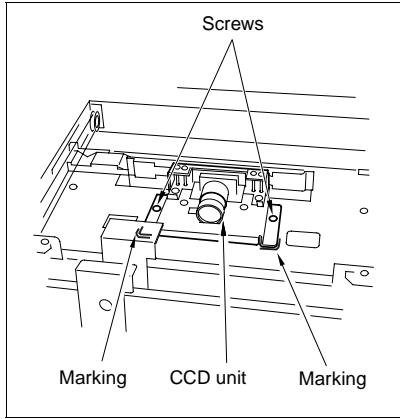


SCANNER SECTION

- (3) Remove the connector (CN170) from the A/D converter board (ADB).



- (4) Remove two screws to remove the CCD unit.



Caution: Mark the place where the CCD unit is installed before removing it.

- (5) Reinstall the above parts following the removal steps in reverse.

[3] Replacing the Exposure Lamp

Caution1:

Be sure the power cord has been unplugged from the wall outlet.

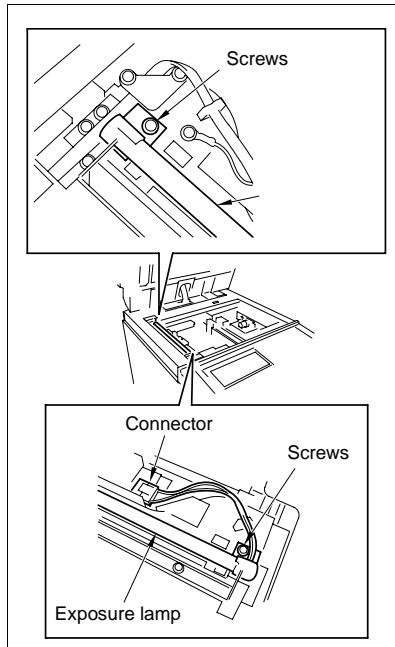
Caution2:

Do not touch the exposure lamp with bare hands.

Caution: Be sure to check the image after installing the exposure lamp. (See "ADJUSTMENTS.")

a. **Procedure**

- (1) Remove the original stopper plates (left and rear), platen glass and top cover (right, middle front, and middle rear). (See "EXTERNAL SECTION.")
- (2) Move the exposure unit to the notch in the main body frame on the paper exit side.
- (3) Remove the connector and two screws, then remove the exposure lamp.



- (4) Reinstall the above parts following the removal steps in reverse.

[4] Removing and Reinstalling the Exposure Unit

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

Caution1: When installing the exposure unit, use the optics unit positioning jig.

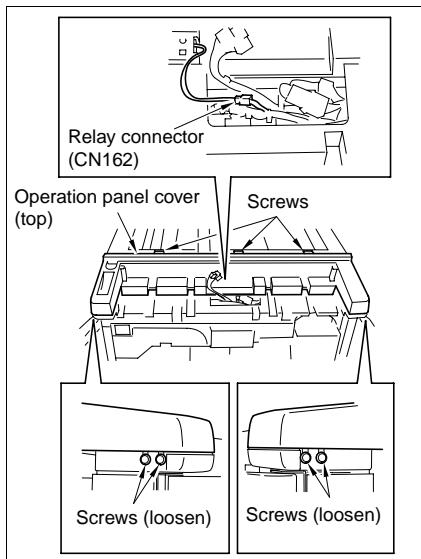
Caution2: Be sure to perform image adjustment after installing the exposure unit. (See "ADJUSTMENT".)

a. Procedure

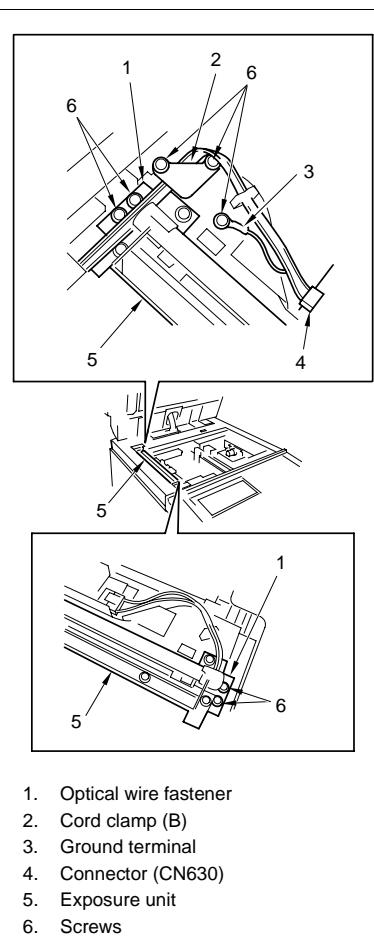
- (1) Remove the right side cover (top), left side cover, original stopper plates (left and rear), platen glass and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION".)
- (2) Remove the operation panel. (See "EXTERNAL SECTION".)
- (3) Remove the relay connector (CN162).

Caution: Each relay connector consist of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN162 connector.

- (4) Loosen the left and right screws on the operation panel cover (top).
- (5) Remove three screws and remove the operation unit cover (top).

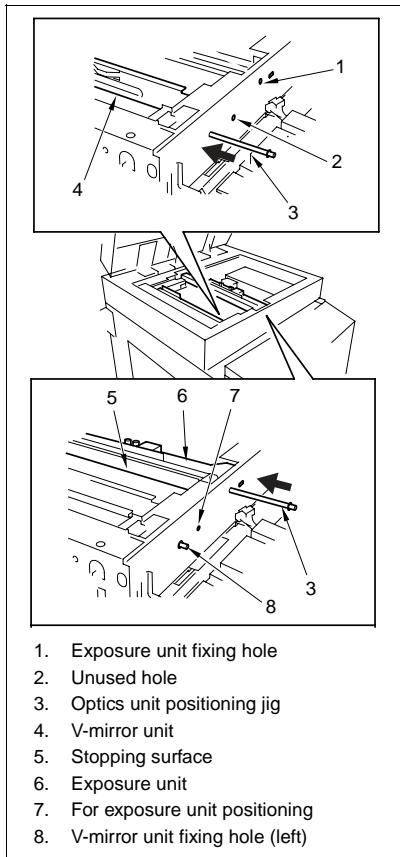


- (6) Move the exposure unit to the notch in the main body frame on the paper exit side.
- (7) Remove two screws to detach the cord clamp (B).
- (8) Remove one screw to remove the ground terminal.
- (9) Disconnect the connector (CN630).
- (10) Remove four screws to detach the exposure unit.



b. Installation procedure

- (1) Move the V-mirror unit toward the paper exit side, then insert the optics positioning jigs from the front to secure the V-mirror unit. Ensure that the optics positioning jigs pass through the V-mirror unit.
- (2) Insert the optics positioning jigs in the holes at the exposure unit mounting position from the front.
- (3) Slide the exposure unit to the paper exit side until it touches the optics unit positioning jig.



- (4) Install the exposure unit to the optics wire mounting bracket with four screws.
- (5) Remove two optics unit positioning jigs.
- (6) Reverse the removal procedure to reinstall the removed parts.

[5] Installing the Optics Wire**△Caution:**

Be sure the power cord has been unplugged from the wall outlet.

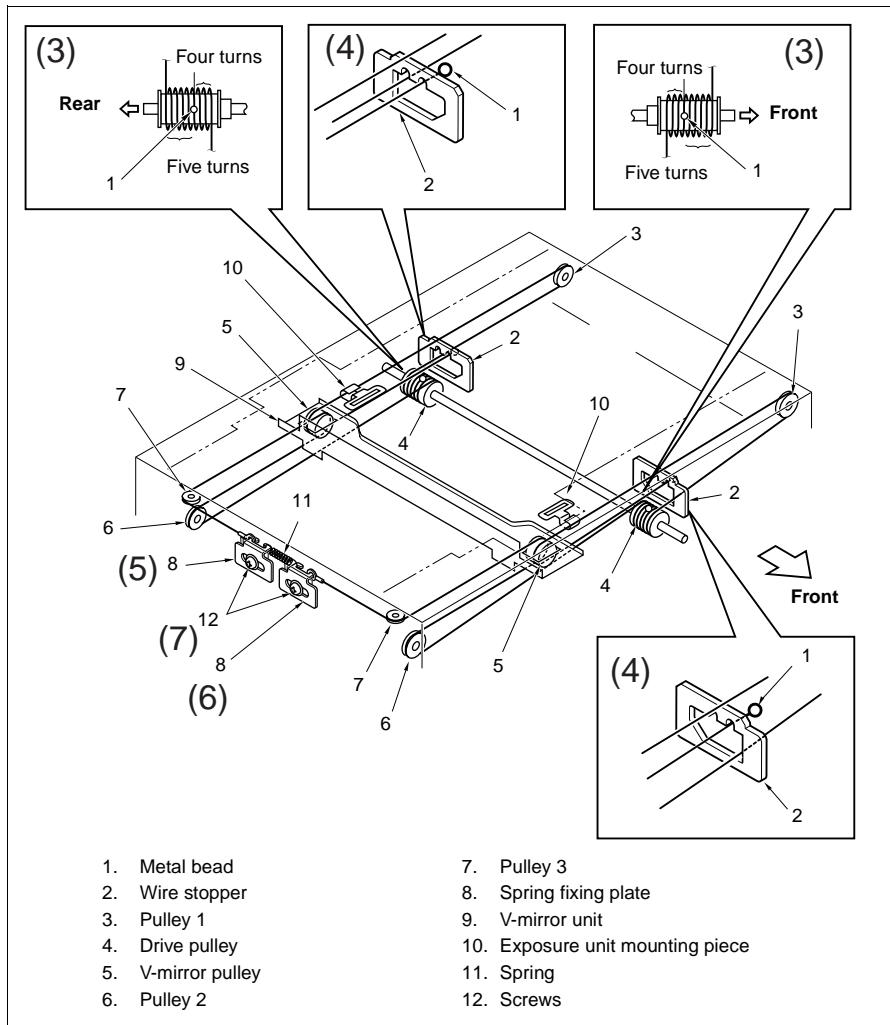
Caution1: When winding the optics wire around the pulley, be sure to run the wire tightly so that it does not ride on the side of the pulley.

Caution2: When re-tensioning or replacing the optics wire, be sure to use the optics positioning jig.

Caution3: Be sure to perform image adjustment after replacing or re-installing the wire (See "ADJUSTMENT".)

a. Procedure

- (1) Remove the exposure unit.
- (2) Move the V-mirror unit toward the paper exit side then insert the optics positioning jigs from the front to secure the V-mirror unit. Ensure that the optics positioning jigs pass through the V-mirror unit.
- (3) Place the metal bead at the midpoint of each optics wire in the mounting hole in the drive pulley. Starting at this point, wind the optics wire five turns to the outside and four times to the inside on the drive pulley.
- (4) After winding the outer wire, secure it to the wire stopper via the outside of pulley 1 and V-mirror pulley through the notch in the wire stopper.



Caution: There are two grooves in the wire stopper. Ensure that the outer groove is at the rear and the inner groove is at the front.

- (5) Reverse the inner wire at pulley 2, pass it along the inside of the V-mirror pulley and pulley 3, then attach the wire terminal to the spring fixing plate. At this time, secure the spring fixing plate temporarily with one screw.

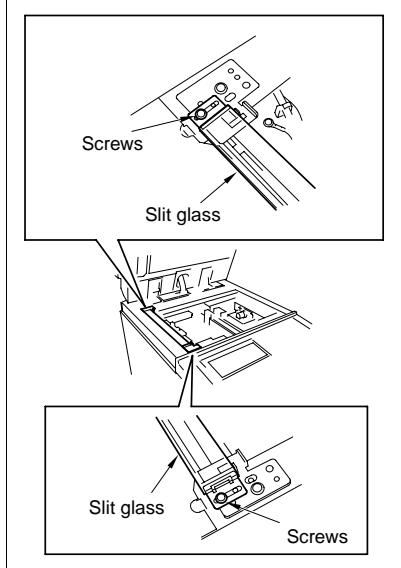
- (6) Install the other wire following the same procedure.
 (7) Loosen each screw that was tightened temporarily, install the spring on the spring fixing plate, and tighten each screw.

SCANNER SECTION

[6] Cleaning the Slit Glass and Platen Glass**⚠ Caution:**

Be sure the power cord has been unplugged from the wall outlet.

- (1) Remove the original stopper plates (left and rear), platen glass, and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove two screws to detach the slit glass.
- (3) Place the removed slit glass and platen glass on a rag and clean with drum cleaner and cleaning pad.

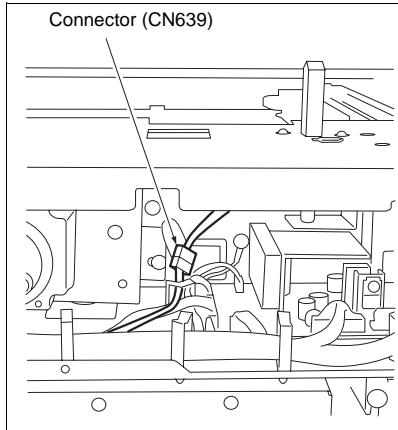


- (4) Reinstall the above parts following the removal steps in reverse.

[7] Replacing the Scanner Motor (M11)**⚠ Caution:**

Be sure the power cord has been unplugged from the wall outlet.

- (1) Remove the RADF unit, original stopper plates (left and rear), platen glass, and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove one connector (CN639) from the APS timing PS (PS51).



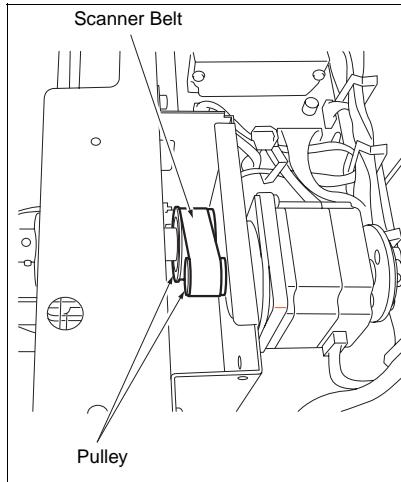
- (3) Remove the hinge mounting plate (rear side) from the scanner unit. (12 screws)
- (4) Remove four screws from the scanner motor (M11), then remove the scanner belt and the scanner motor.

SCANNER SECTION

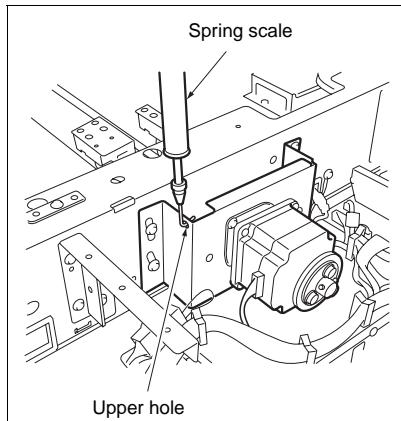
- (5) Install the scanner motor (M11) and the scanner belt. Tighten the scanner motor loosely with four screws.

Caution1: Make sure to install the belt in the middle of two pulleys. Also make sure that the belt is not placed on the edges of pulleys, or that it is running off from the pulleys.

Caution2: Tighten the motor by first tightening the screw and then give it one turn to loosen slightly.

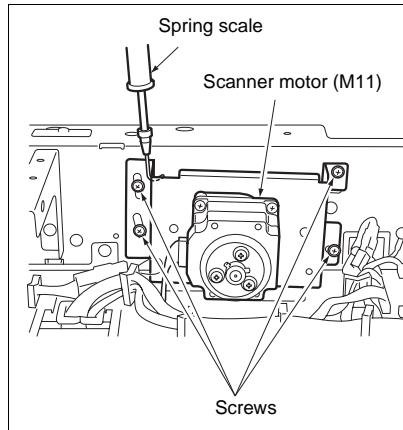


- (6) Hook the spring scale on the upper hole of the scanner motor (M11).



- (7) Pull the spring scale upward, and tighten the scanner motor (M11) tightly with the tension pressure of 2 ± 0.2 kgf. (Use four screws)

Caution: Make sure that the scanner motor moves up and down when confirming the tension pressure.



- (8) Make sure that the belt is not slacked off after marking an adjustment.
(9) Insert the connector to the scanner motor (M11).
(10) Follow the disassembly procedures in reverse order to install.

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WRITE SECTION

[1] Removing and Reinstalling the Write Unit

⚠ Warning:

- (1) Do not energize the write unit when it is not in the correct position.
- (2) Never remove the write unit cover and the polygon unit cover.
- (3) Never look directly into the laser beam. It can cause blindness.
- (4) Never remove the write unit for at least two minutes after turning OFF the main switch.

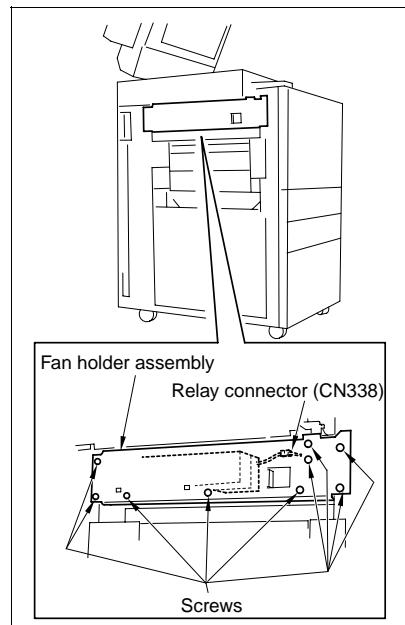
⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

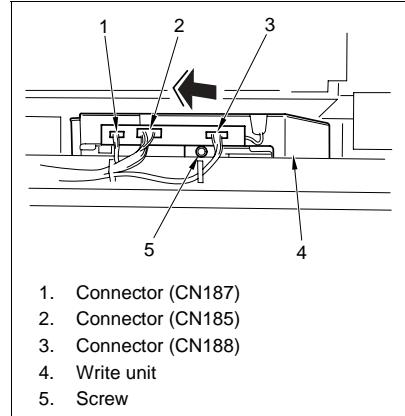
a. Procedure

- (1) Remove the left side cover. (See "EXTERNAL SECTION.")
- (2) Remove nine screws to detach the fan holder assembly.
- (3) Remove the relay connector (CN338).

Caution: Each relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN338 connector.



- (4) Remove the three connectors (CN185, 187, 188).
- (5) Loosen the screw to draw out and remove the write unit.



- (6) Reinstall the above parts following the removal steps in reverse.

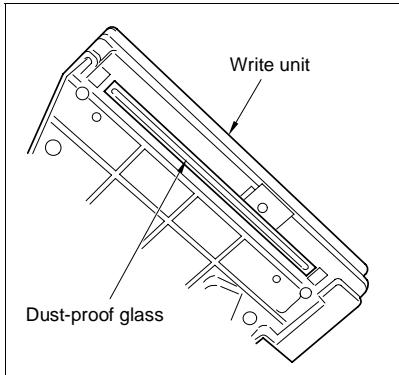
[2] Cleaning the Dust-proof Glass

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the write unit.
- (2) Clean the dust-proof glass at the bottom of the write unit with cleaning pad and blower brush.



- (3) Reinstall the above parts following the removal steps in reverse.

DRUM UNIT

[1] Removing and Reinstalling the Drum Unit

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

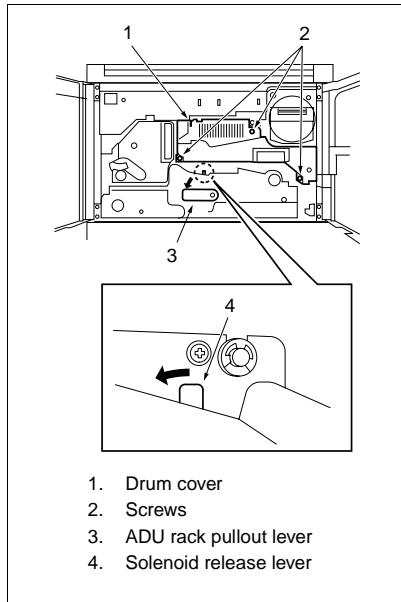
Caution1: Be sure to put a drum cover over the removed drum unit and store the drum unit in a dark place.

Caution2: When installing or removing the drum unit, do not rotate it in the direction opposite to the specified one. Rotating the drum unit in the opposite direction during copy operation could damage the cleaning blade.

Caution3: When installing or removing the drum unit, take care not to touch the separation claw.

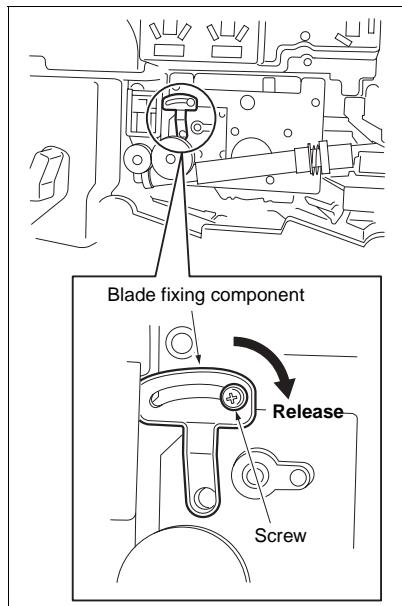
a. Procedure

- (1) Open the left and right front doors.
- (2) While pressing the solenoid release lever on top of the ADU rack to the left, flip the ADU rack pull-out lever to the left.
- (3) Loosen three screws to remove the drum cover.



- (4) Loosen one screw and slide the blade fixing component in the direction of the arrow until it stops to release the crimp of the cleaning blade.

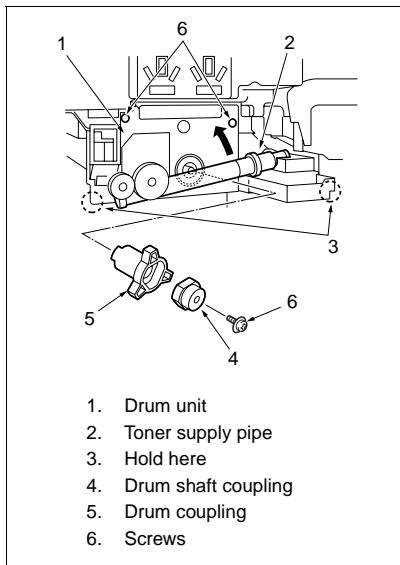
- (5) Loosen the screw of the blade fixing component.



- (6) Remove the two screws securing the drum unit.
- (7) Release the toner supply pipe in the direction of the arrow.
- (8) Remove the screw securing the coupling to detach the drum shaft coupling and drum coupling.

DRUM UNIT

- (9) Hold the two sections shown in the figure and pull out the drum unit.



- (10) Reinstall the above parts following the removal steps in reverse.

Caution: To install the coupling, see "[2] Installing the Coupling."

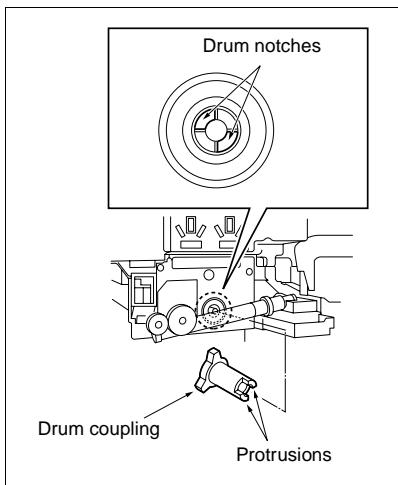
[2] Installing the Coupling

⚠ Caution:

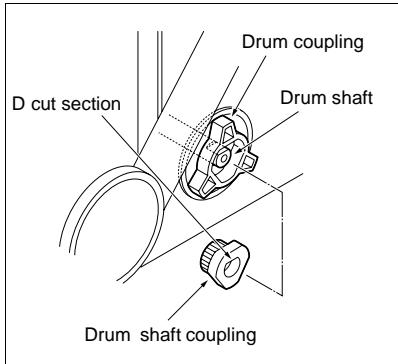
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

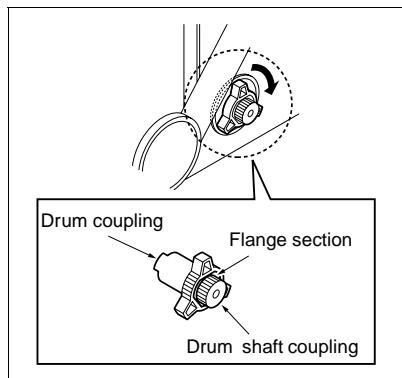
- (1) Clean the outer surface of the drum coupling and drum shaft coupling with drum cleaner and cleaning pad.
- (2) Insert the drum coupling aligning the protrusions on the drum coupling with the notches in the drum.



- (3) Insert the drum shaft coupling so that the D cut section of the drum shaft coupling matches the drum shaft.



- (4) Turn the head of the drum coupling clockwise so that the flange section on the drum shaft coupling is flush.



- (5) Tighten with screw.

[3] Removing, Cleaning, and Reinstalling the Drum

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

Caution1: Be careful not to touch the drum or the cleaning blade with bare hands, or damage them.

Caution2: When leaving the drum, be sure to put the drum cover over the drum and store it in a dark place.

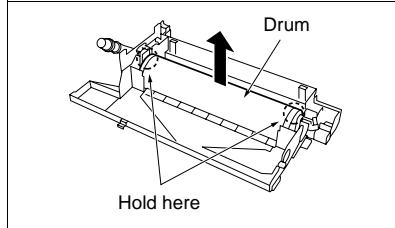
Caution3: When reinstalling the drum, cleaning blade, and toner guide roller, apply setting powder to the entire surface of the drum and also to the cleaning blade regardless of whether the parts are new or old.

Caution4: After applying setting powder to the drum, perform the following before installing the drum unit in the main body.

- 1) With the charging corona unit and developing unit removed, turn the drum once (to prevent setting powder from scattering onto the charging corona unit, and to prevent image defects).
- 2) When installing a new drum, be sure to enter mode 25 and select "Copy Count by Parts to be Replaced" to reset drum counter. (See "ADJUSTMENT.")

a. Procedure

- (1) Remove the drum unit from the main body.
- (2) Remove the charging corona unit, developing unit, cleaning blade, and toner guide roller from the drum unit. (See "CHARGING CORONA UNIT SECTION," "DEVELOPING UNIT," and "CLEANING/TONER RECYCLE SECTION.")
- (3) Supporting the drum at both ends with your fingers so that the drum surface is not damaged, slowly remove it upward (front side first).
- (4) Clean the toner scattered around the drum installation area using a blower brush and cleaning pad.



- (5) Reinstall the above parts following the removal steps in reverse.

[4] Removing and Reinstalling the Separation Claws and Separation Claw Solenoid

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

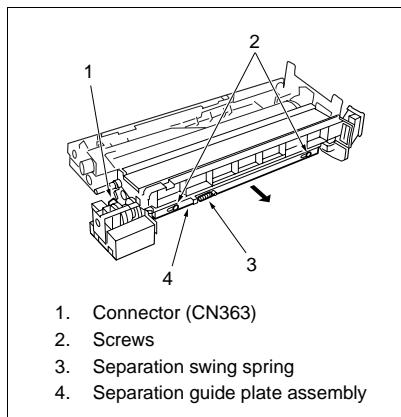
Caution1: Take care not to damage the drum when removing the separation claws.

Caution2: Note the orientation and position of the separation claws when reinstalling them.

Caution3: Do not touch the cleaning blade and drum with bare hands.

a. Procedure

- (1) Remove the drum unit from the main body.
- (2) Remove the drum.
- (3) Remove the connector (CN363) and separation swing spring.
- (4) Remove two screws and detach the separation guide plate assembly.

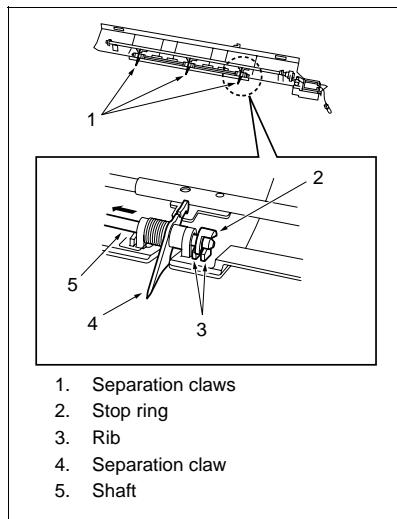


- (5) Remove the stop ring, slide the shaft, and remove the three separation claws.

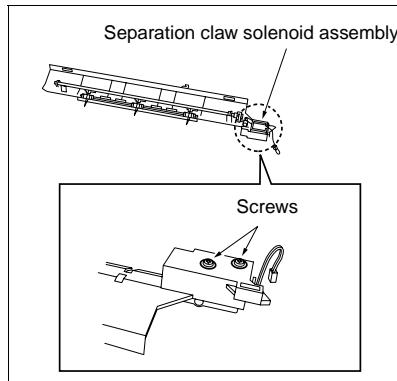
Caution1: Clean the shaft with drum cleaner and a cleaning pad when installing. The separator claws cannot move smoothly if they are installed with toner remaining on the shaft.

Caution2: When installing, insert the retaining ring between the ribs.

Caution3: After installing the separation claws, check that they move smoothly.

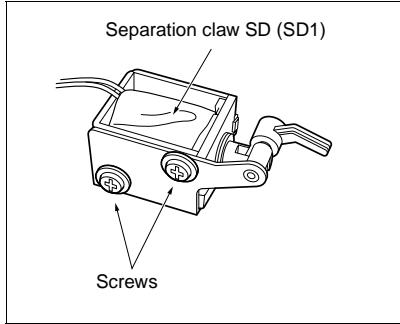


- (6) Remove two screws and remove the separator claw solenoid assembly.



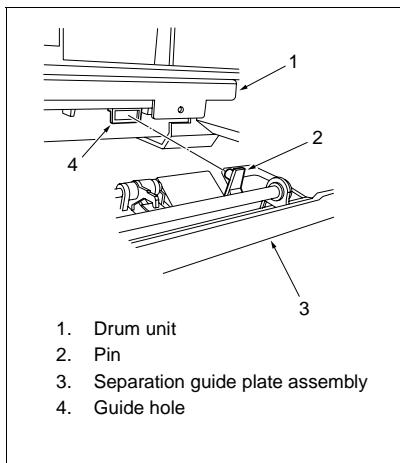
DRUM UNIT

- (7) Remove two screws and detach the separation claw SD (SD1).



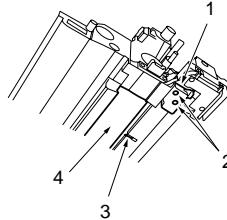
- (8) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the separation claw unit, match the pin and guide hole shown in the figure.

**[Reference]**

When removing the separation claw solenoid (Normally, it should not be removed except when replacing the solenoid).

- (1) Install the separation claw unit to the drum unit.
- (2) Tighten the solenoid screw when the claw closest to the drum touches the drum.

(Bottom surface of the drum unit)

- 1. Separation claw SD (SD1)
- 2. Screws
- 3. Separation claw
- 4. Drum unit

- (3) Set the drum unit to the main body and check that the tips of the separation claws are off the drum. (Standard clearance: More than 0 mm up to 1mm.)

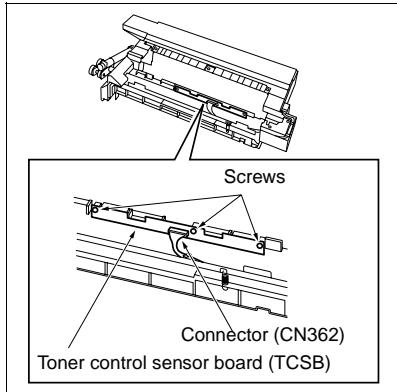
[5] Removing and Reinstalling the Toner Control Sensor Board

⚠ Caution:

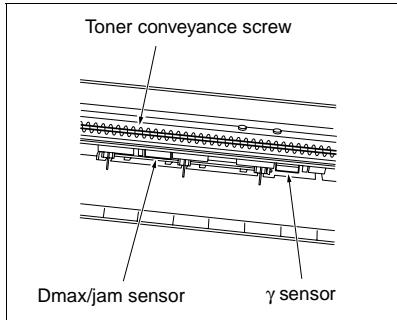
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the drum unit from the main body.
- (2) Remove the drum.
- (3) Remove the separator claw solenoid assembly.
- (4) Remove the connector (CN362).
- (5) Remove three screws and remove the toner control sensor board.



- (6) Clean the sensors of the toner control sensor board (the Dmax/jam sensor at the front and the γ sensor at the back) using a blower brush, drum cleaner, and cleaning pad.



- (7) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the toner control sensor board, tighten the screws pulling it up until stoppers.

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DRUM UNIT

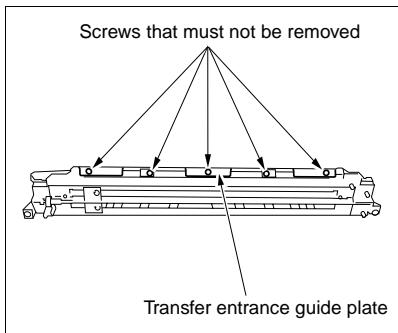
1 DIS/ASSEMBLY

DRUM UNIT

CORONA UNIT

[1] Screws that Must not be Removed

- Five screws securing the transfer entrance guide plate



Caution: Do not strain the transfer entrance guide plate and guide rollers, for example, pressing down on them strongly.

Caution: Take care not to damage the edge of the transfer entrance guide plate since it is deformed easily.

[2] Removing and Reinstalling the Charging Corona Unit

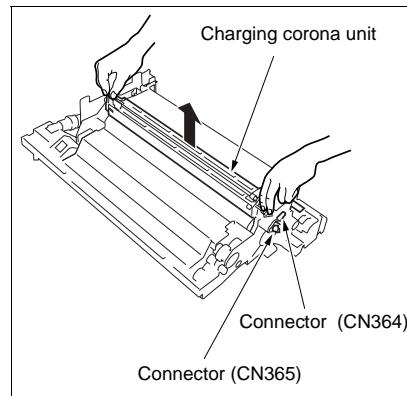
Caution:

Be sure the power cord has been unplugged from the wall outlet.

Caution: When removing the charging corona unit, do not touch the mesh of the charging corona unit control plate.

a. Procedure

- Remove the drum unit from the main body. (See "DRUM UNIT.")
- Disconnect the two connectors (CN364, 365). Remove the charging corona unit by holding it at the positions shown below with both hands.



- Reinstall the above parts following the removal steps in reverse.

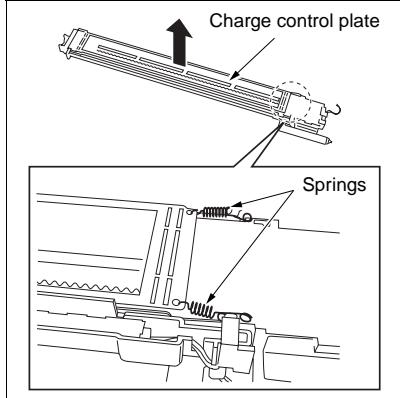
CORONA UNIT

[3] Removing and Reinstalling the Charge Control Plate**⚠ Caution:**

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the charging corona unit.
- (2) Remove the two springs and remove the charge control plate.



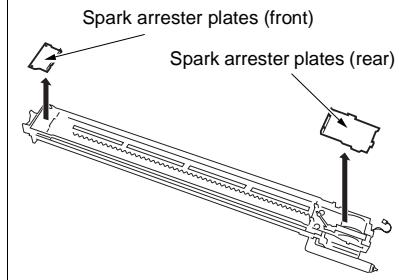
- (3) Reinstall the above parts following the removal steps in reverse.

[4] Replacing the Charging Wires**⚠ Caution:**

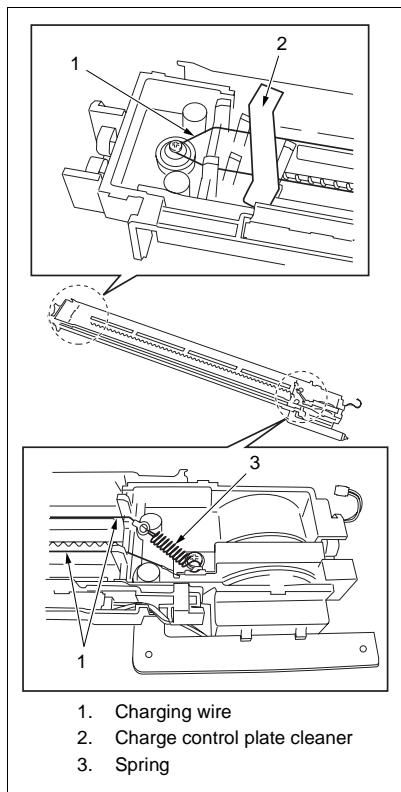
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the charging corona unit.
- (2) Remove the charge control plate.
- (3) Remove the spark arrester plates (front and rear).



- (4) Remove the charge control plate cleaner.
- (5) Remove the spring and remove the charging wire.



- (6) Reinstall the above parts following the removal steps in reverse.

[5] Removing and Reinstalling the Charging Wire Cleaning Unit

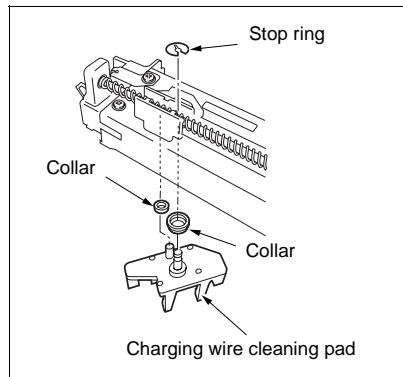
Caution:

Be sure the power cord has been unplugged from the wall outlet.

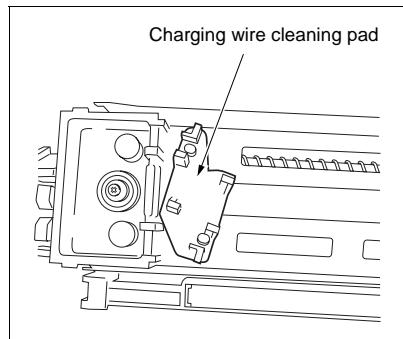
a. Procedure

- (1) Remove the charging wire.
- (2) Remove the stop ring and remove the charging wire cleaning pad.

Caution1: When removing the charging wire cleaning pad, be careful not to drop the two collars.



Caution2: When installing the charging wire cleaning pad, install the pad in the orientation shown below. Also, do not forget to attach the two collars.



- (3) Reinstall the above parts following the removal steps in reverse.

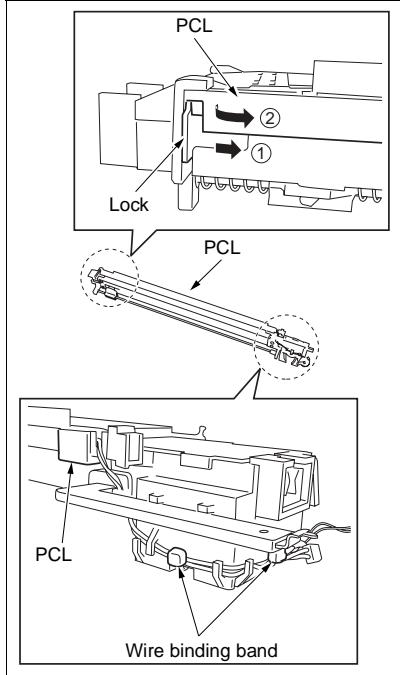
CORONA UNIT

[6] Removing and Reinstalling the PCL**⚠ Caution:**

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the charging corona unit.
- (2) Disconnect the wire binding band at two locations.
- (3) Release the lock and remove the PCL.



- (4) Reinstall the above parts following the removal steps in reverse.

[7] Cleaning the Charging Corona Unit/PCL**⚠ Caution:**

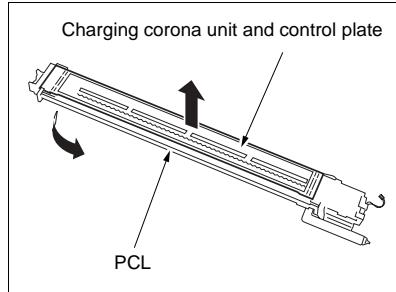
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the charging corona unit.
- (2) Remove the charge control plate and PCL.
- (3) Place the charge control plate on a flat surface and clean by gently tapping with a cleaning pad moistened with drum cleaner. Next, remove any remaining dirt with a blower brush.

Caution: Take care not to damage the mesh of the charge control plate during cleaning.

- (4) Clean the PCL with a cleaning pad moistened with drum cleaner.



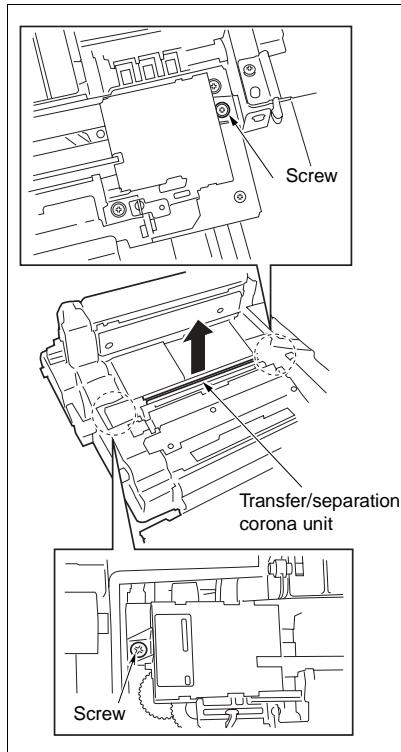
[8] Removing and Reinstalling the Transfer/Separation Corona Unit

Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (2) Loosen two screws to remove the transfer/separation corona unit.



- (3) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the transfer/separation corona unit, make sure the cleaning gear coupling is engaged properly.

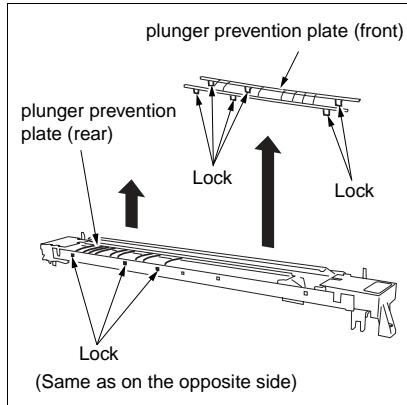
[9] Removing and Reinstalling the Plunger Prevention Plate

Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (2) Remove the transfer/separation corona unit.
- (3) Release the six locks and remove the plunger prevention plate (front).
- (4) Release the six locks and remove the plunger prevention plate (rear).



- (5) Reinstall the above parts following the removal steps in reverse.

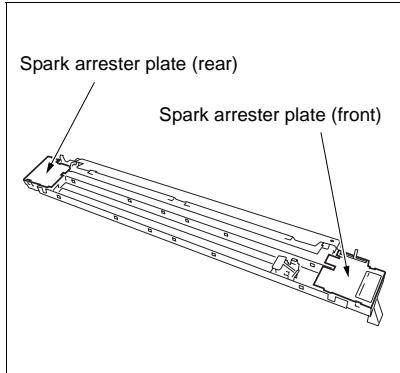
CORONA UNIT

[10] Replacing the Transfer/Separation Wires and Transfer/Separation Wire Cleaning Block**Caution:**

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (2) Remove the transfer/separation corona unit.
- (3) Remove the plunger prevention plate.
- (4) Remove the spark arrester plates (front and rear).

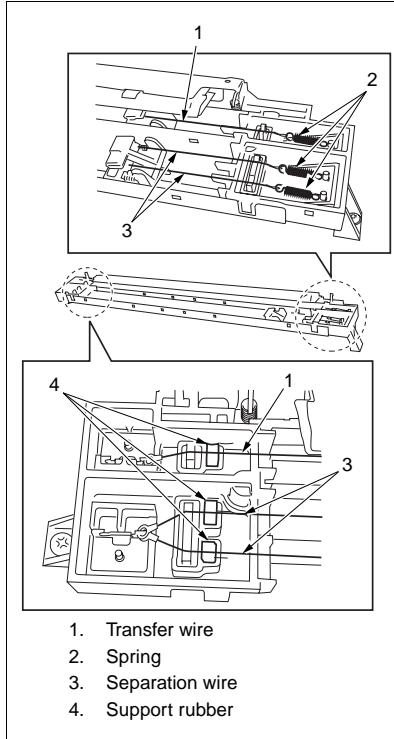


- (5) Remove the springs of wires (one each).

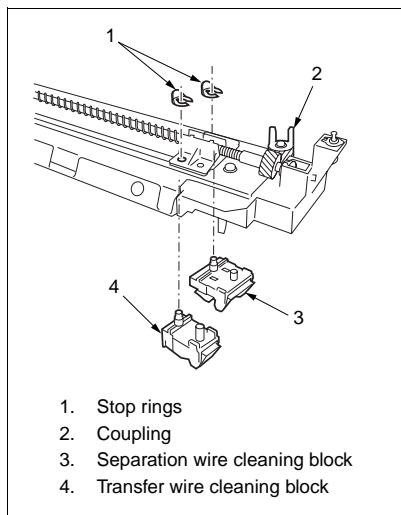
Caution: When installing the springs, bend the edge of each spring inside.

- (6) Release and remove three wires from each cleaning block.

Caution: Be careful not to drop and lose the support rubber when removing the wire.



- (7) Turn the transfer/separation corona unit upside down, remove the stop rings, and remove the transfer wire cleaning block and separation wire cleaning block from the front side.



- (8) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the transfer/separation wires, check that the coupling of the cleaning pad drive gear is engaged correctly.

[11] Removing and Reinstalling the TSL Unit

⚠ Caution:

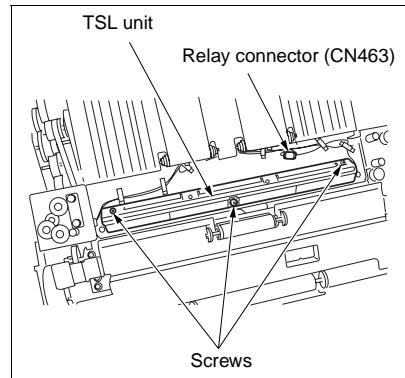
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (2) Remove the transfer/separation corona unit.
- (3) Remove the relay connector (CN463).

Caution: A relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN463 connector.

- (4) Remove the three screws and remove the TSL unit.



- (5) Reinstall the above parts following the removal steps in reverse.

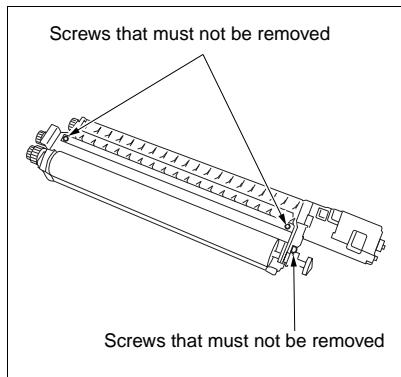
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DEVELOPING UNIT

[1] Screws that must not be Removed

a. Procedure

- (1) Two screws securing the toner transfer regulation plate.
- (2) One screw securing the magnet angle adjusting knob.



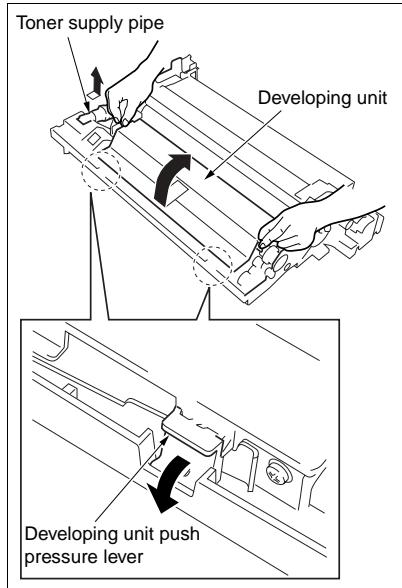
[2] Removing and Reinstalling the Developing Unit

Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the drum unit from the main body. (See "DRUM UNIT.")
- (2) Release the toner supply pipe.
- (3) Release the developing unit push pressure lever.
- (4) Supporting the developing unit at the positions shown below with both hands, remove it from the drum unit.



- (5) Reinstall the above parts following the removal steps in reverse.

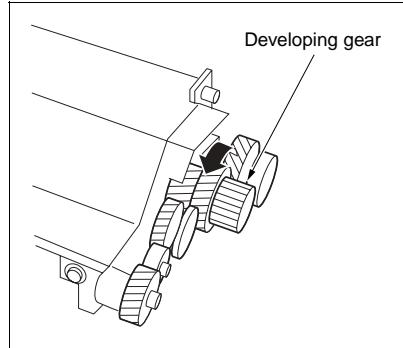
DEVELOPING UNIT

[3] Replacing the Developer

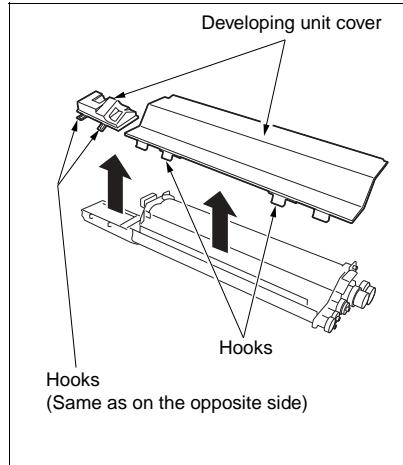
Caution1: When replacing the developer in the developing unit, take care not to allow dirt to get into it.

Caution2: To rotate the developing sleeve, rotate the developing gear counterclockwise.

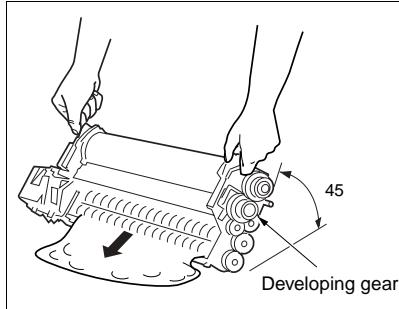
Caution3: Never rotate the developing gear clockwise.

**a. Procedure**

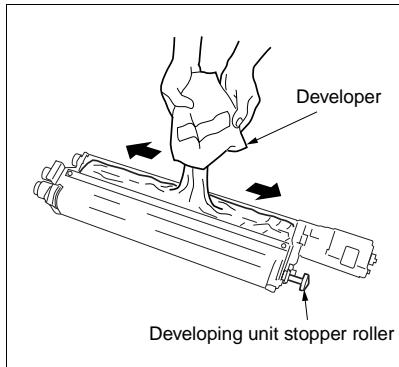
- (1) Draw out the drum unit from the main body. (See "DRUM UNIT.")
- (2) Remove the developing unit from the drum unit.
- (3) Release the hook of the developing unit cover and remove it upward.



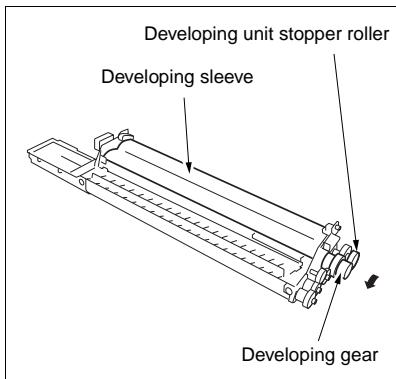
- (4) Tilt the developing unit about 45° and rotate the developing gear counterclockwise to discharge all of the developer adhering to the inside of the developing unit and magnet roller.



- (5) Supply fresh developer evenly from the top of the agitator screws.
- (6) Rotate the developing gear until the developer enters the developing unit.
- (7) Repeat steps (5) and (6) to supply all of the developer.



- (8) Rotate the developing gear counterclockwise to check that the developer bristles along the entire length of the developing sleeve.



- (9) Install the developing unit cover, then install the developing unit in the drum unit.

Caution: After installing the developing unit in the drum unit, make sure the developing unit stopper roller is in contact with the developing unit stopper plate (allocation of DSD).

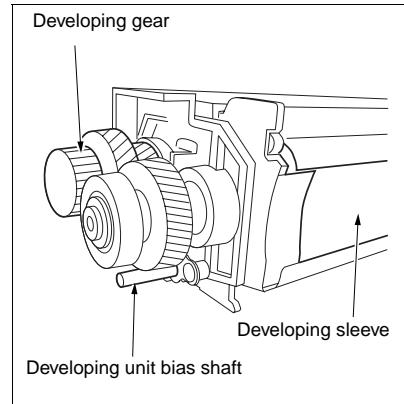
[4] Cleaning the Developing Unit Bias shaft

Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the drum unit from the main body. (See "DRUM UNIT.")
- (2) Remove the developing unit from the drum unit.
- (3) Wipe the dirt on the developing unit bias shaft with cleaning pad.



- (4) Reinstall the above parts following the removal steps in reverse.

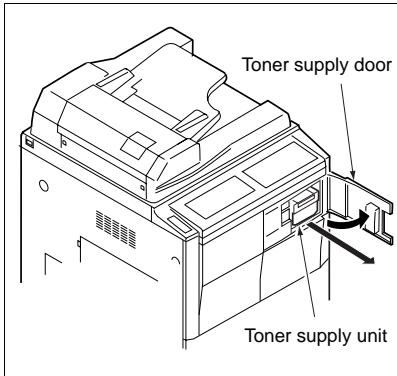
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TONER SUPPLY UNIT

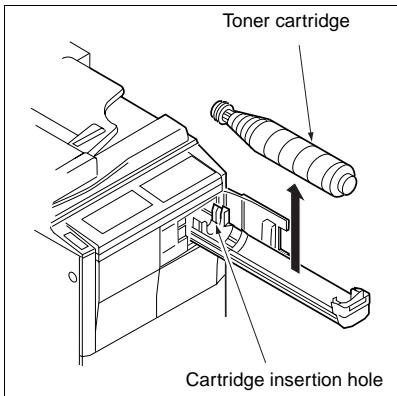
[1] Replacing and Cleaning the Toner Cartridge

a. Procedure

- (1) Open the toner supply door and pull the toner supply unit forward.



- (2) Remove the toner cartridge.
- (3) After removing the toner cartridge, clean the area around the toner cartridge insertion hole with a cleaning pad.



- (4) Reinstall the above parts following the removal steps in reverse.

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CLEANING/TONER RECYCLE UNIT

[1] Removing and Reinstalling the Cleaning Blade

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

Caution1: Be sure to replace the following parts at the same time:

- Cleaning blade
- Toner guide roller (TGR)

Caution2: Do not touch the edges of the cleaning blade with bare hands.

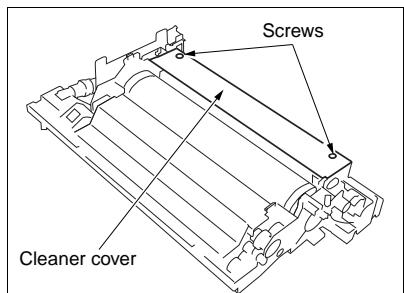
Caution3: When reinstalling the cleaning blade when the humidity is high (80% or more), apply setting powder to the entire surface of the drum and cleaning blade regardless of whether the drum and cleaning blade are new or old.

Caution4: When you have applied setting powder to the drum, perform the following before installing the drum unit on the main body:

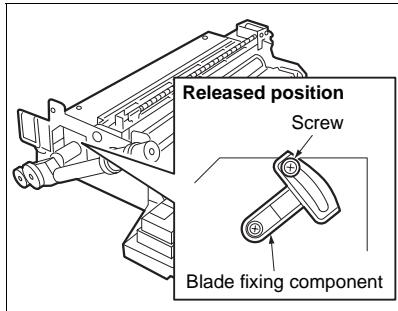
- 1) To ensure accurate toner concentration, wipe scattered setting powder off the γ sensor and Dmax/JAM sensor on the toner control sensor board with a rag moistened with alcohol.
- 2) With the charging corona unit and developing unit removed, turn the drum once (to prevent setting powder from scattering onto the charging corona unit, and to prevent image defects).

a. Procedure

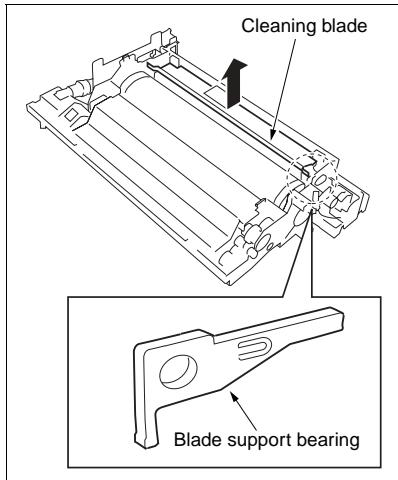
- (1) Remove the drum unit. (See "DRUM UNIT.")
- (2) Remove the charging corona unit. (See "CHARGING CORONA UNIT.")
- (3) Remove the developing unit. (See "DEVELOPING UNIT.")
- (4) Remove two screws to remove the cleaner cover.



- (5) Check that the blade fixing component is released. If it is not, release it referring to "DRUM UNIT."



- (6) Remove the blade support bearing to remove the cleaning blade.



- (7) Reinstall the above parts following the removal steps in reverse.

Caution: After replacing the cleaning blade, be sure to perform Blade Setting Mode Adjustment in the 36 mode. (To prevent the blade from peeling.)

[2] Removing and Reinstalling the Toner Guide Roller (TGR)

Caution:

Be sure the power cord has been unplugged from the wall outlet.

Caution1: Be sure to replace the following parts at the same time:

- Cleaning blade
- Toner guide roller

Caution2: Do not touch the edges of the cleaning blade with bare hands.

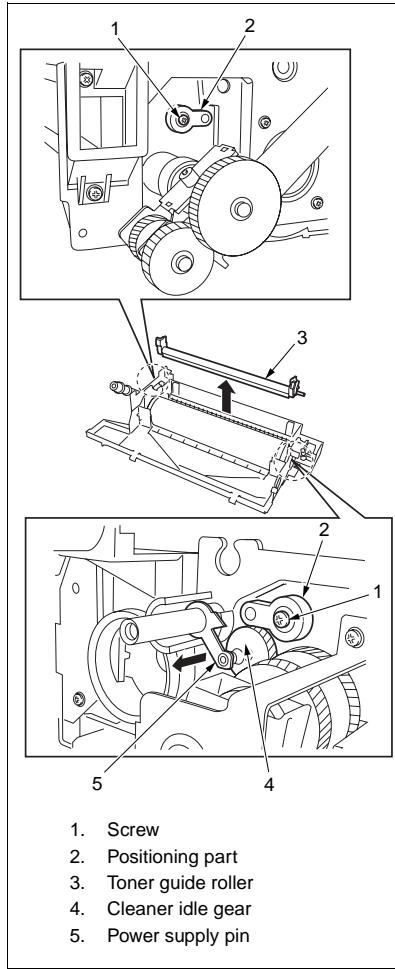
Caution3: When reinstalling the cleaning blade when the humidity is high (80% or more), apply setting powder to the entire surface of the drum and cleaning blade regardless of whether the parts are new or old.

Caution4: When reinstalling the toner guide roller, apply setting powder to the toner guide roller evenly. Apply with the toner guide roller removed from the drum unit.

Caution5: Do not touch the toner guide roller brush with bare hands. Also, do not directly contact the rollers to any object.

a. Procedure

- (1) Remove the drum unit. (See "DRUM UNIT.")
- (2) Remove the charging corona unit. (See "CHARGING CORONA UNIT.")
- (3) Remove the cleaning blade.
- (4) Release the power supply pin in contact with the toner guide roller shaft.
- (5) Remove the cleaner idle gear.
- (6) Remove the screws securing the front and rear positioning parts.
- (7) Remove the toner guide roller.



1. Screw
2. Positioning part
3. Toner guide roller
4. Cleaner idle gear
5. Power supply pin

- (8) Reinstall the above parts following the removal steps in reverse.

PAPER FEED UNITS OF TRAYS 1 AND 2

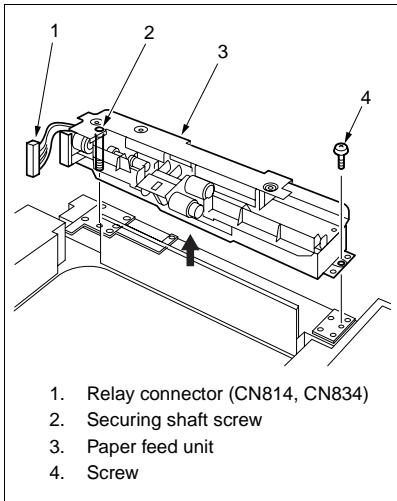
[1] Removing and Reinstalling the Paper Feed Unit

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out paper feed tray 1 or 2.
- (2) Loosen the securing shaft screw, and remove one screw.
- (3) Disconnect the relay connector (CN814, CN834) and remove the paper feed unit by lifting.



- (4) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Paper Feed Trays 1 and 2

⚠ Warning:

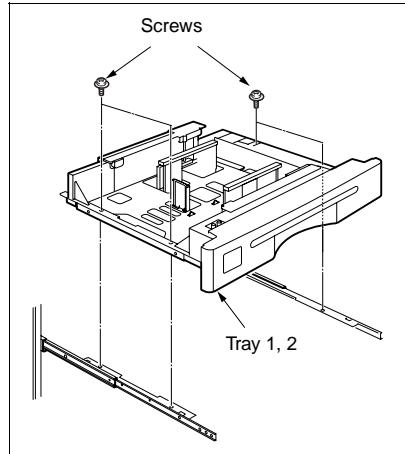
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out paper feed tray 1 or 2.
- (2) Remove the paper feed unit.
- (3) Remove four screws and remove tray 1 or 2 by lifting.

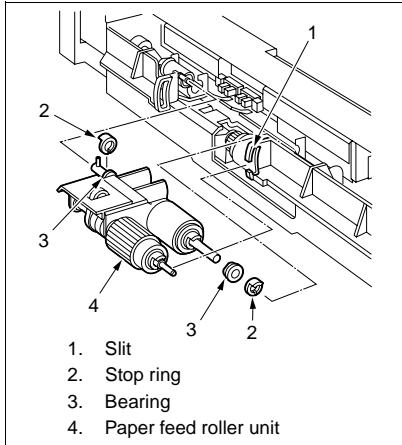


- (4) Reinstall the above parts following the removal steps in reverse.

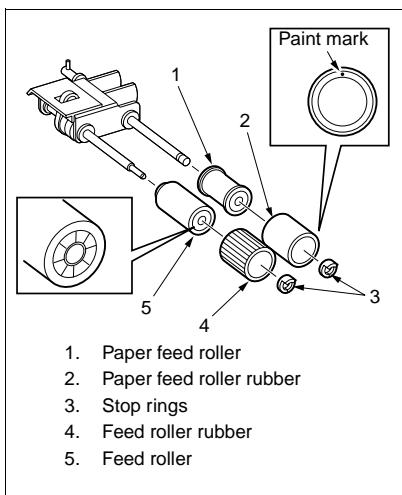
PAPER FEED UNITS OF TRAYS 1 AND 2

[3] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber**a. Procedure**

- (1) Remove the paper feed unit.
- (2) Remove the two stop rings and slide the two bearings outward.
- (3) Release the feed roller axis from the holder slit to detach the paper feed roller unit.



- (4) Remove the two stop rings from the paper feed roller unit to detach the paper feed roller and feed roller.
- (5) Remove the rubber from each roller.



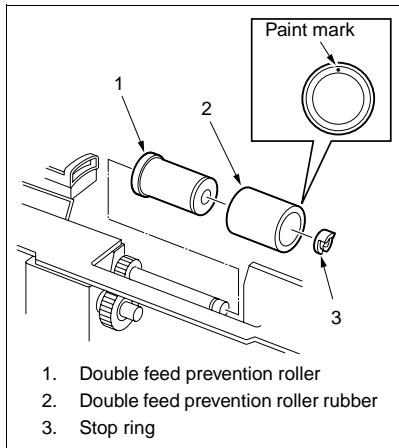
- (6) Reinstall the above parts following the removal steps in reverse.

Caution1: When reinstalling the rollers, pay attention to their orientation.

Caution2: Check that no grease or the like remains on each roller.

[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber**a. Procedure**

- (1) Remove the paper feed unit.
- (2) Remove the paper feed roller unit.
- (3) Remove the stop ring to detach the double feed prevention roller.
- (4) Remove the double feed prevention roller rubber from the roller.



- (5) Reinstall the above parts following the removal steps in reverse.

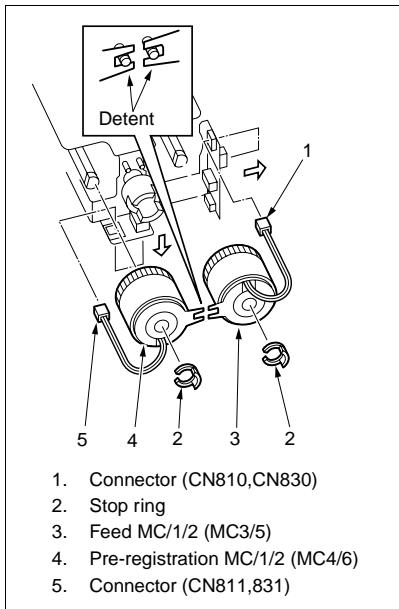
Caution1: When reinstalling the double feed prevention roller, pay attention to their orientation.

Caution2: Check that no grease or the like remains on the double feed prevention roller.

[5] Replacing the Pre-registration and Feed Clutches (MCs)

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove the four connectors (CN810, 811, 830, 831).
- (3) Remove the stop ring to detach the pre-registration MC/1/2 (MC4/6) and feed MC/1/2 (MC3/5).



- (4) Reinstall the above parts following the removal steps in reverse.

Caution: When reinstalling each MC, fit the detent in the slit in the MC.

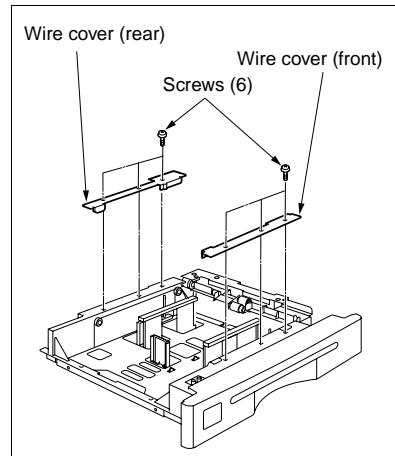
[6] Replacing the Wires

Caution1: After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

Caution2: Be sure to install the wires so that they do not cross or ride over each other.

<Removing Wires>

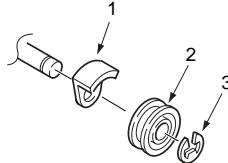
- (1) Remove the paper feed unit.
- (2) Remove three screws to remove the wire cover (front) and wire cover (rear).



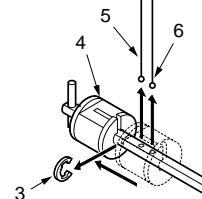
PAPER FEED UNITS OF TRAYS 1 AND 2

- (3) Remove the front and rear wires according to steps 1 to 7 below.

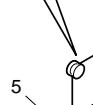
2.4. Remove the E-ring to detach the wire restraining cover and pulley.



1. Remove the E-ring to slide out the drive pulley.



3. Remove wire C.

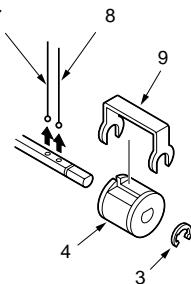


5. Remove wire D.



7. Repeat steps 2 to 5 to remove wire A and wire B.

6. Remove drive pulley holder and E-ring and pull out the drive pulley.

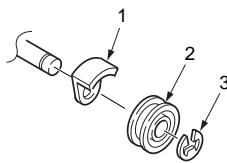


1. Wire restraining cover
2. Pulley
3. E-ring
4. Drive pulley
5. Wire D (White)

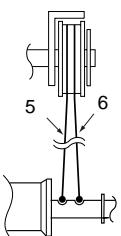
6. Wire C (black)
7. Wire B (white)
8. Wire A (black)
9. Drive pulley holder
10. Up/down plate

<Installing Wires>

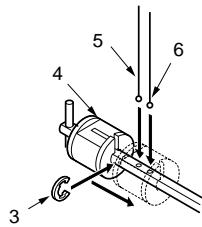
- 2.** Install the pulley, pass wire D through the pulley, and install the wire restraining cover and E-ring.



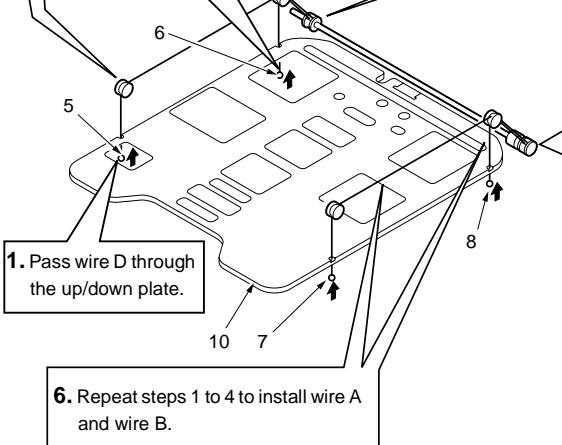
- 4.** Install the pulley, pass wires C and D, and install the wire restraining cover and retaining ring. Wire D must be inside. Wires must not cross.



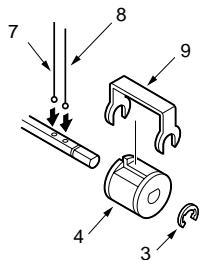
- 5.** Install the wires C and D from inside the drive shaft hole, push in the drive pulley, and secure with E-ring.



- 3.** Pass wire C through the up/down plate.



- 7.** Install the wires A and B from inside the drive shaft hole, push in the drive pulley, and secure with E-ring. Next, install the drive pulley holder.

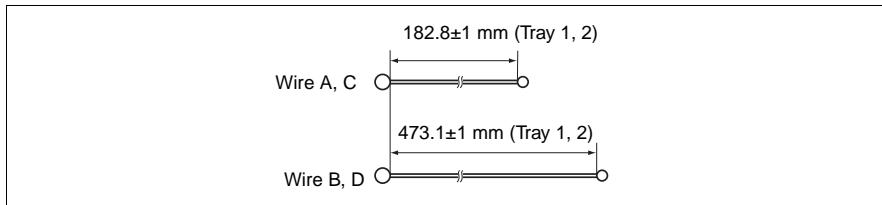


1. Wire restraining cover
2. Pulley
3. E-ring
4. Drive pulley
5. Wire D (White)

6. Wire C (black)
7. Wire B (white)
8. Wire A (black)
9. Drive pulley holder
10. Up/down plate

PAPER FEED UNITS OF TRAYS 1 AND 2

<Wire Lengths>



PAPER FEED UNIT OF TRAY 3

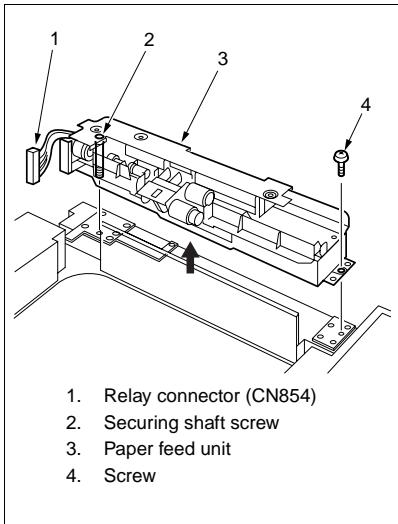
[1] Removing and Reinstalling the Paper Feed Unit

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out paper feed tray 3.
- (2) Loosen the securing shaft screw, and remove one screw.
- (3) Disconnect the relay connector (CN854) and remove the paper feed unit by lifting.



- (4) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling Paper Feed Tray 3

⚠ Warning:

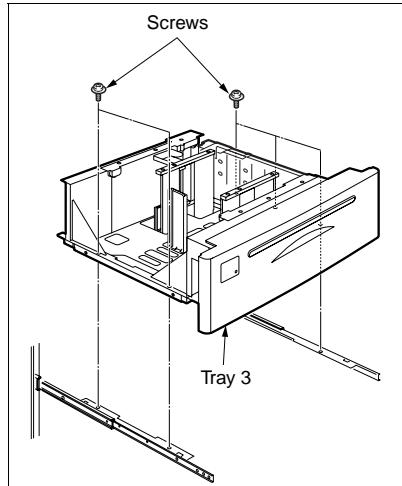
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out paper feed tray 3.
- (2) Remove the paper feed unit.
- (3) Remove four screws and remove tray 3 by lifting.

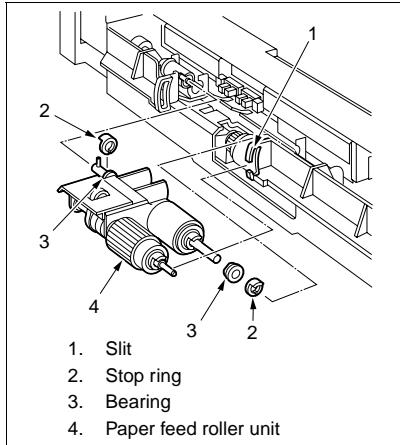


- (4) Reinstall the above parts following the removal steps in reverse.

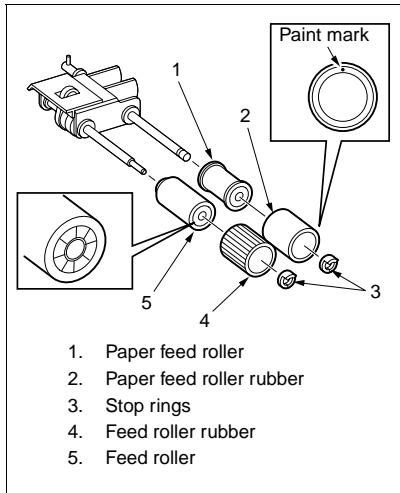
PAPER FEED UNIT OF TRAY 3

[3] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber**a. Procedure**

- (1) Remove the paper feed unit.
- (2) Remove two stop rings and slide the two bearings outward.
- (3) Release the feed roller axis from the holder slit to detach the paper feed roller unit.



- (4) Remove two stop rings from the paper feed roller unit to detach the paper feed roller and feed roller.
- (5) Remove the rubber from each roller.



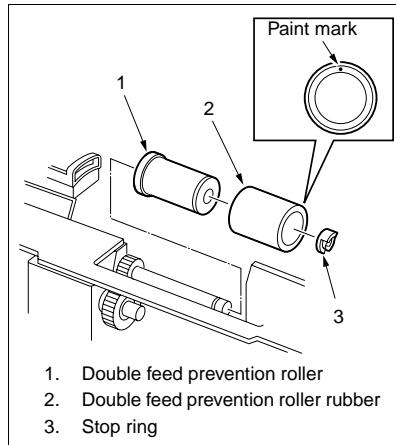
- (6) Reinstall the above parts following the removal steps in reverse.

Caution1: When reinstalling the rollers, pay attention to their orientation.

Caution2: Check that no grease or the like remains on each roller.

[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber**a. Procedure**

- (1) Remove the paper feed unit.
- (2) Remove the paper feed roller unit.
- (3) Remove the stop ring to detach the double feed prevention roller.
- (4) Remove the double feed prevention roller rubber from the roller.



- (5) Reinstall the above parts following the removal steps in reverse.

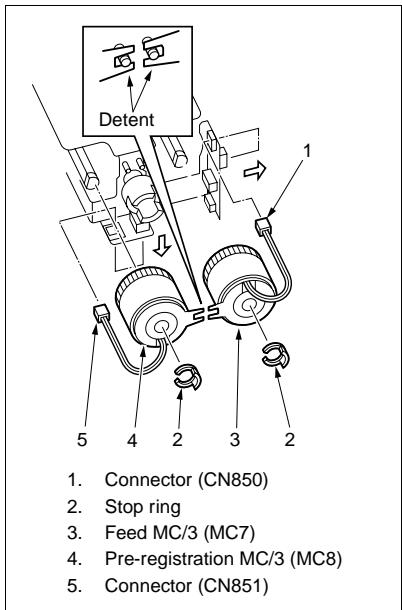
Caution1: When reinstalling the double feed prevention roller, pay attention to their orientation.

Caution2: Check that no grease or the like remains on the double feed prevention roller.

[5] Replacing the Pre-registration and Feed Clutches (MCs)

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove two connectors (CN850, 851).
- (3) Remove two stop rings to detach the pre-registration MC/3 (MC8) and feed MC/3 (MC7).



- (4) Reinstall the above parts following the removal steps in reverse.

Caution: When reinstalling each MC, fit the detent in the slit in the MC.

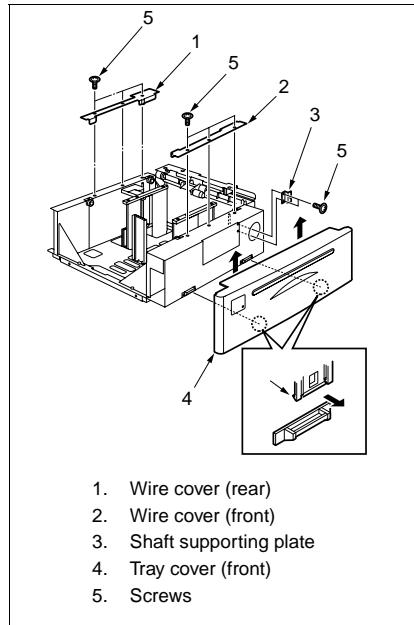
[6] Replacing the Wires

Caution1: After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

Caution2: Be sure to install the wires so that they do not cross or ride over each other.

<Removing Wires>

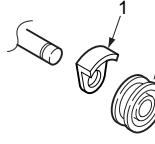
- (1) Remove the paper feed unit.
- (2) Remove two claws to remove the tray front cover.
- (3) Remove two screws to remove shaft supporting plate.
- (4) Remove three screws to remove the wire cover(front) and wire cover (rear).



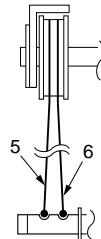
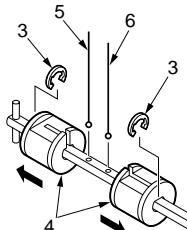
PAPER FEED UNIT OF TRAY 3

(5) Remove the front and rear wires according to steps 1 to 7 below.

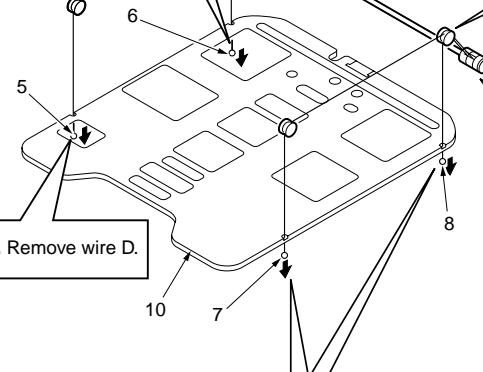
2,4. Remove the E-ring to detach the wire restraining cover and pulley.



1. Remove the E-ring to slide out the drive pulley.

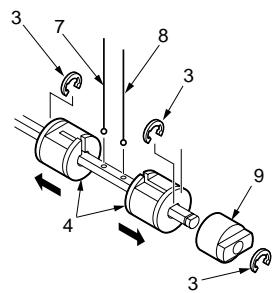


3. Remove wire C.



5. Remove wire D.

6. Remove drive pulley holder and three E-ring and pull out the drive pulley.



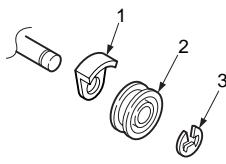
7. Repeat steps 2 to 5 to remove wire A and wire B.

1. Wire restraining cover
2. Pulley
3. E-ring
4. Drive pulley
5. Wire D (White)

6. Wire C (black)
7. Wire B (white)
8. Wire A (black)
9. Drive pulley holder
10. Up/down plate

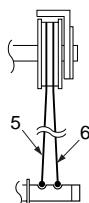
<Installing Wires>

- 2.** Install the pulley, pass wire D through the pulley, and install the wire restraining cover and E-ring.

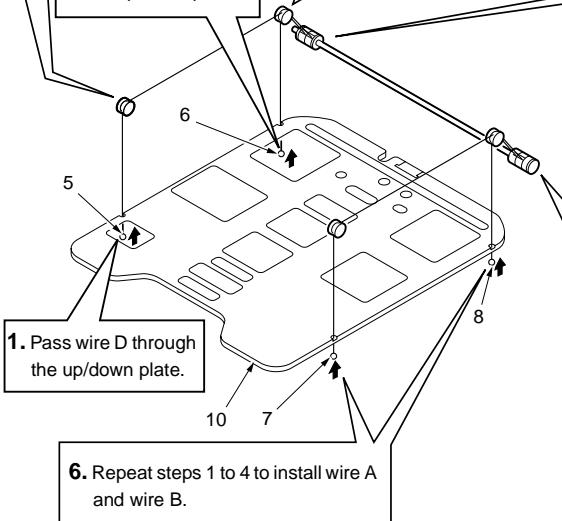
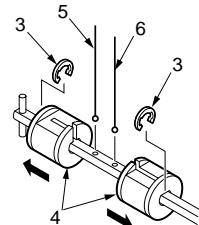


- 3.** Pass wire C through the up/down plate.

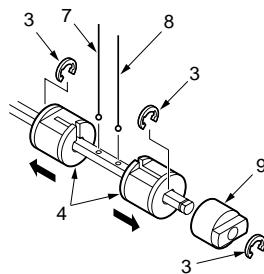
- 4.** Install the pulley, pass wires C and D, and install the wire restraining cover and retaining ring. Wire D must be inside. Wires must not cross.



- 5.** Install the wires C and D from inside the drive shaft hole, push in the drive pulley, and secure with E-ring.



- 7.** Install the wires A and B from inside the drive shaft hole, push in the drive pulley, and secure with E-ring. Next, install the drive pulley holder.

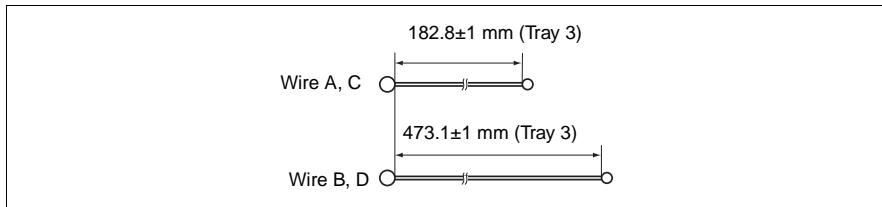


1. Wire restraining cover
2. Pulley
3. E-ring
4. Drive pulley
5. Wire D (White)

6. Wire C (black)
7. Wire B (white)
8. Wire A (black)
9. Drive pulley holder
10. Up/down plate

PAPER FEED UNIT OF TRAY 3

<Wire Lengths>



BY-PASS FEED TRAY

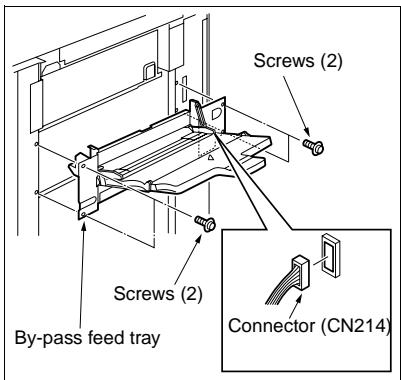
[1] Removing and Reinstalling the by-pass Feed Tray

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the developing suction filter cover and right side cover (upper). (See "EXTERNAL SECTION.")
- (2) Remove connector (CN214).
- (3) Remove four screws to remove the by-pass feed tray.

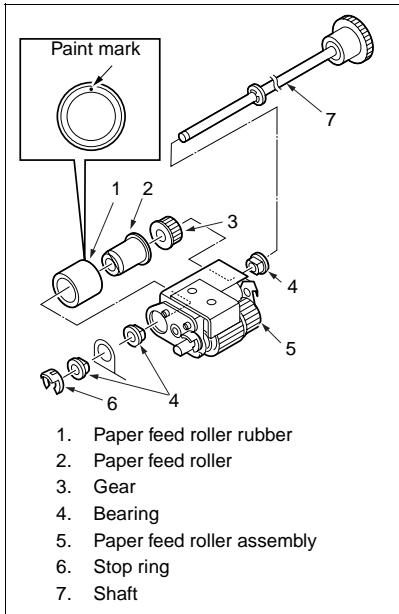


- (4) Reinstall the above parts following the removal steps in reverse.

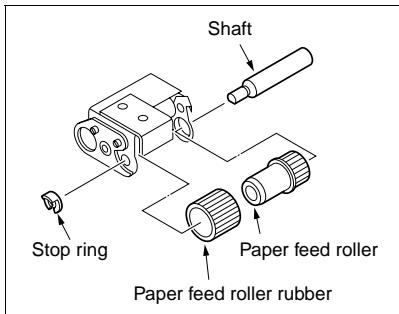
[2] Replacing the Paper Feed Roller/ Paper Feed Roller Rubber

a. Procedure

- (1) Remove the by-pass feed tray.
- (2) Remove the stop ring and bearing and pull out the shaft from the paper feed roller.
- (3) Remove the two bearings and one gear and remove the paper feed roller rubber from the paper feed roller.



- (4) Remove the stop ring from the paper feed roller assembly to pull out the shaft and remove the paper feed roller rubber from the paper feed roller.



- (5) Reinstall the above parts following the removal steps in reverse.

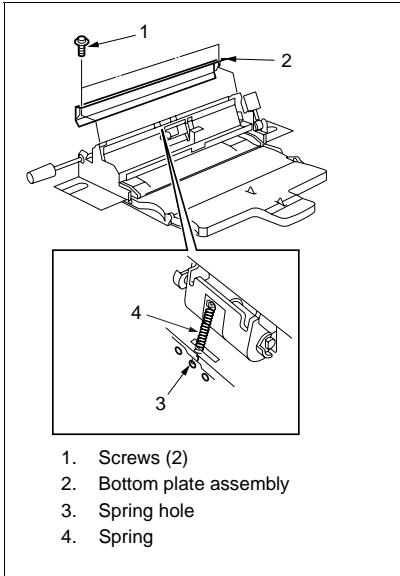
Caution1: Check that the orientation of the roller is correct when installing.

Caution2: Check that no grease or the like remains on the roller.

BY-PASS FEED TRAY

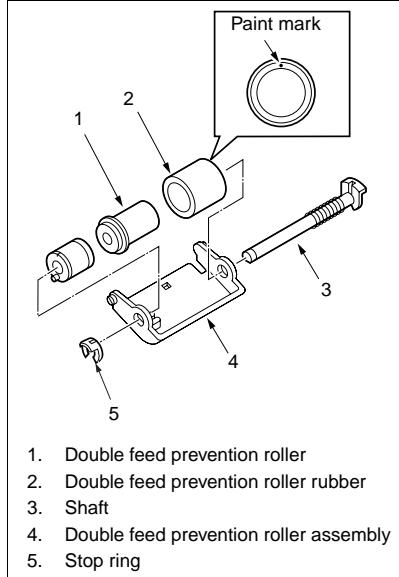
[3] Replacing the Double Feed Prevention Roller Rubber**a. Procedure**

- (1) Remove the by-pass feed tray and place the tray upside down.
- (2) Remove two screws to remove the bottom plate assembly.
- (3) Remove the spring.



- (4) Remove the double feed prevention roller assembly from the by-pass feed tray unit.

- (5) Remove the stop ring to pull out the shaft and remove the double feed prevention roller rubber from the double feed prevention roller.



- (6) Reinstall the above parts following the removal steps in reverse.

Caution1: Check that the orientation of the double feed prevention roller is correct when installing.

Caution2: Check that no grease or the like remains on the double feed prevention roller.

Caution3: There are three spring holes. Insert the spring in the middle hole.

VERTICAL CONVEYANCE SECTION

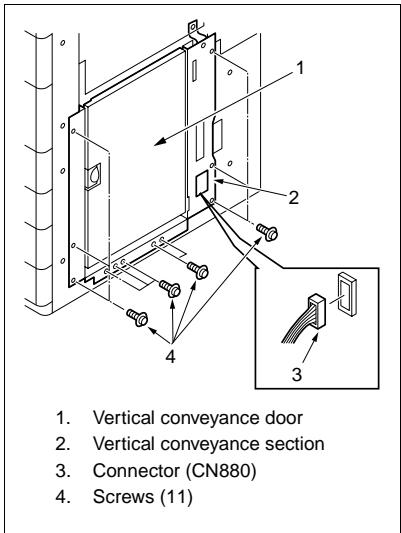
[1] Removing and Reinstalling the Vertical Conveyance Section

Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove all right side covers. (See "EXTERNAL SECTION.")
- (2) Disconnect the connector (CN880).
- (3) Remove eleven screws to remove the vertical conveyance section.



- (4) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the vertical conveyance section, be sure to secure the screws with the vertical conveyance door closed.

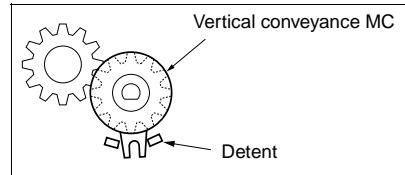
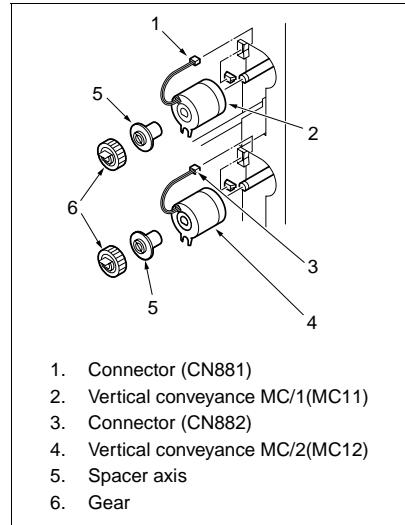
[2] Removing and Reinstalling the Vertical Conveyance MC (MC11, MC12)

Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the vertical conveyance section.
- (2) Remove the gear lock to remove the two gears and two spacer axes.
- (3) Disconnect the two connectors (CN881, CN882) to remove the wiring harness from the harness guide.
- (4) Remove each MC.



- (5) Reinstall the above parts following the removal steps in reverse.

Caution: When installing, be sure the detent of the clutch is at the position shown above.

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ADU UNIT

[1] Drawing out and Reinstalling the ADU Stand

⚠ Warning:

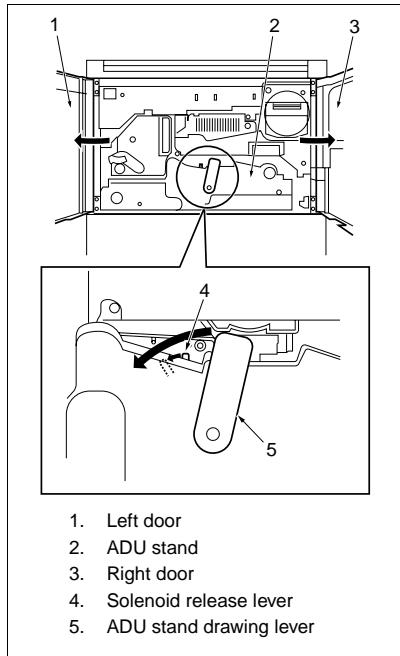
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Open the front right and left doors.
- (2) With the solenoid release lever on the ADU stand pushed to the left, turn down the ADU drawing lever to the left.
- (3) Grip the ADU stand drawing lever and draw out the ADU stand.



- (4) To reinstall the ADU stand, push in the ADU stand and then turn the ADU stand drawing lever upright.

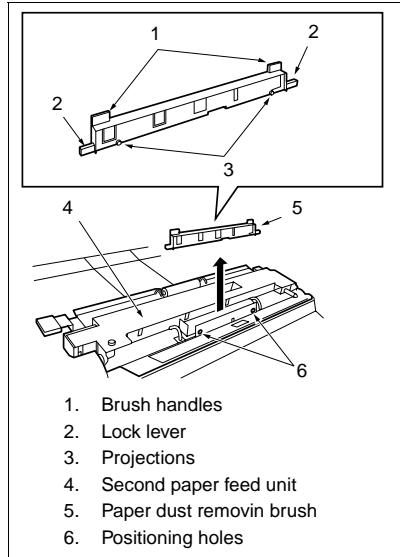
[2] Cleaning the Paper Dust Removing Brush

⚠ Caution:

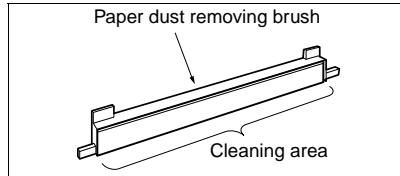
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Release the left and right lock levers, lift the brush handles by the handles to remove the paper dust removing brush.



- (3) Using a blower brush, clean the paper dust removing brush.



- (4) Reinstall the above parts following the removal steps in reverse.

Caution: When installing, align the projection on the paper dust removing brush with the positioning hole on the second paper feed unit.

[3] Cleaning the Paper Mis-centering PS (PS70)/Leading Edge PS (PS43)

⚠ Warning:

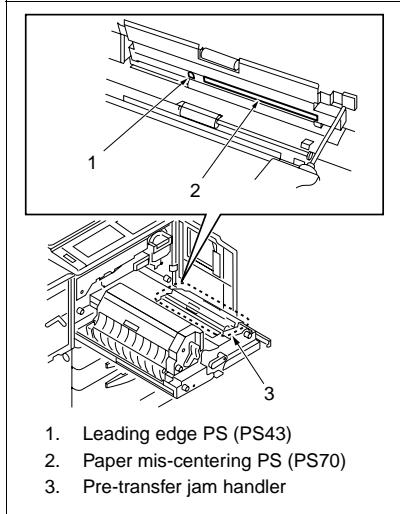
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Open the pre-transfer jam handler. Clean the sensor of the paper mis-centering PS (PS70) and leading edge PS (PS43) at the rear of the pre-transfer jam handler using a drum cleaner or cleaning pad.



- (3) Reinstall the above parts following the removal steps in reverse.

[4] Removing and Reinstalling the Registration MC (MC1)

⚠ Warning:

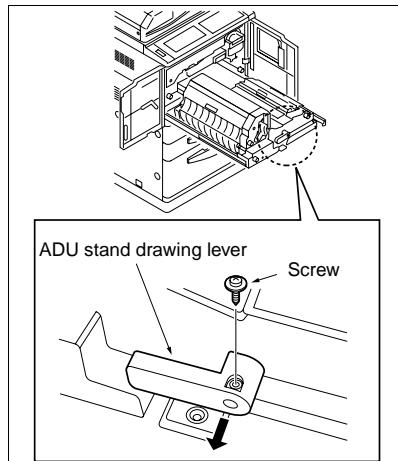
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

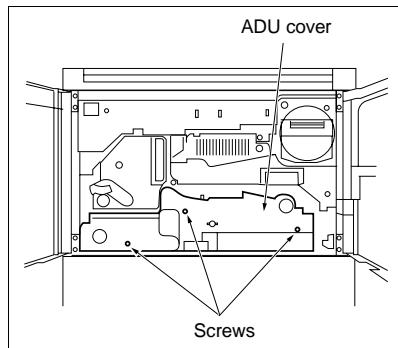
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

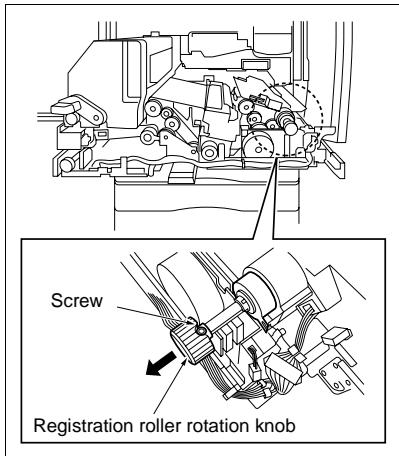
- (1) Draw out the ADU stand from the main body.
- (2) Remove one screw to remove the ADU stand drawing lever.



- (3) Remove three screws to remove the ADU cover.



- (4) Remove one screw and remove the registration roller rotation knob.

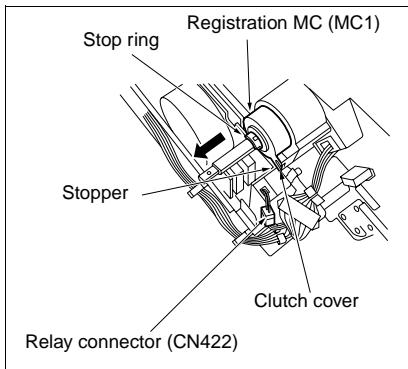


- (5) Disconnect the relay connector (CN422).

Caution: A relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN422 connector.

- (6) Remove the stop ring to detach the registration MC (MC1).

Caution: When reinstalling, be sure the detent of the clutch is in the clutch cover groove.



- (7) Reinstall the above parts following the removal steps in reverse.

[5] Removing and Reinstalling the Second Paper Feed Unit

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

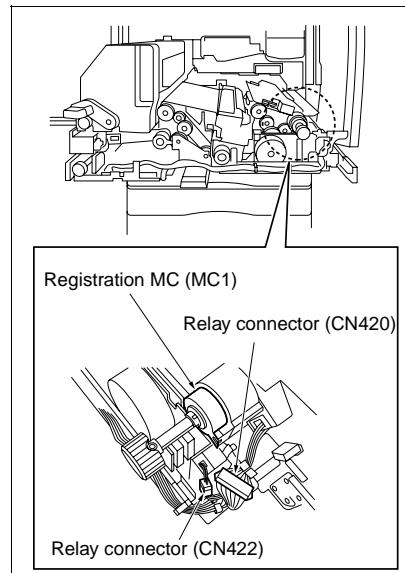
⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

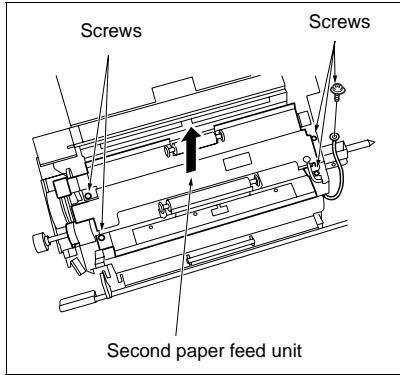
- (1) Draw out the ADU stand from the main body.
- (2) Detach the ADU cover.
- (3) Disconnect the two relay connectors (CN420, 422), and disconnect the relay connector from the wiring harness.

Caution: Each relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.



ADU UNIT

- (4) Remove five screws to remove the second paper feed unit.



- (5) Reinstall the above parts following the removal steps in reverse.

[6] Cleaning the Registration PS (PS44)

⚠ Warning:

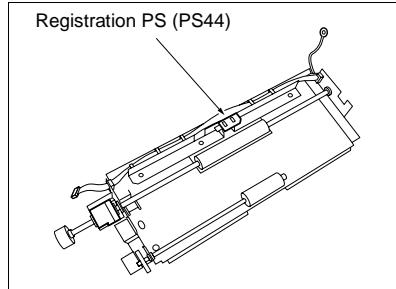
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Detach the ADU cover.
- (3) Remove the second paper feed unit
- (4) Turn the second paper feed unit upside down and clean the registration PS (PS44) with a blower brush.



- (5) Reinstall the above parts following the removal steps in reverse.

[7] Removing and Reinstalling the Registration Roller

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

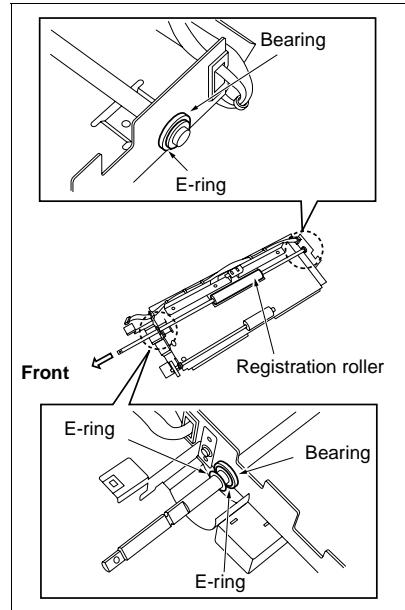
⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

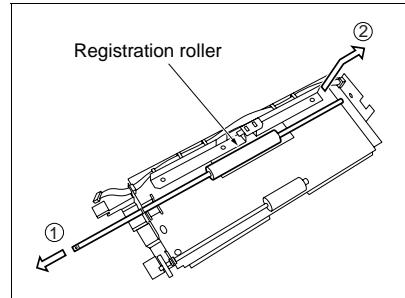
a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Detach the ADU cover.
- (3) Remove the second paper feed unit
- (4) Remove the registration MC (MC1).
- (5) Turn the second paper feed unit upside down and remove the E-ring on the front of the registration roller.

- (6) Remove the two E-rings (one at the left and the other at the right) and one bearing from the registration roller.



- (7) Slide the registration roller to the front, then remove it by lifting the rear end.



- (8) Reinstall the above parts following the removal steps in reverse.

[8] Removing and Reinstalling the Pre-transfer Roller

⚠ Warning:

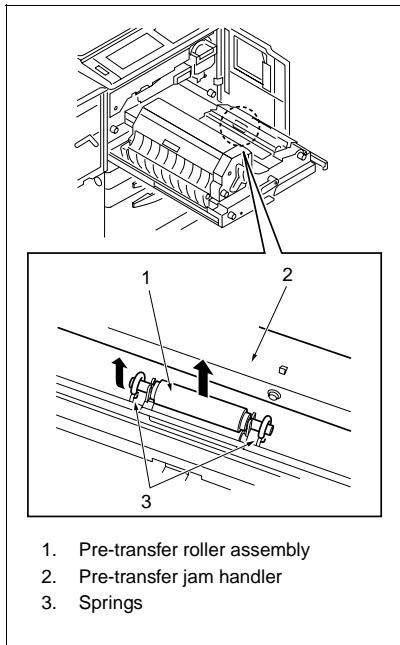
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

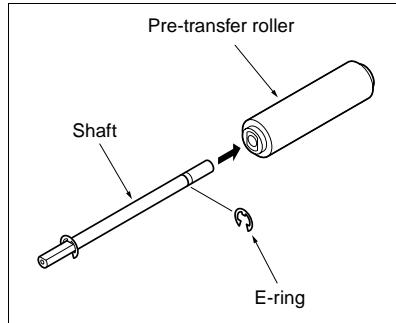
a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the two springs.
- (3) Open the pre-transfer jam handler to remove the pre-transfer roller assembly.



- (4) Remove the E-ring to remove the pre-transfer roller from the shaft.

Caution: When reinstalling, pay attention to the position of the E-ring.



- (5) Reinstall the above parts following the removal steps in reverse.

[9] Cleaning the ADU Paper Reverse PS (PS45)/Reverse/Exit PS (PS46)

⚠ Warning:

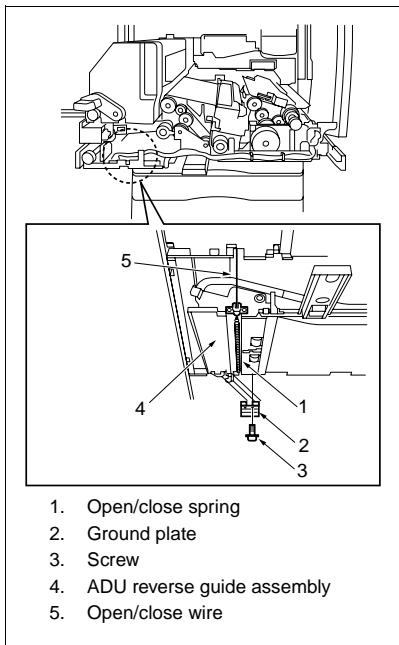
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

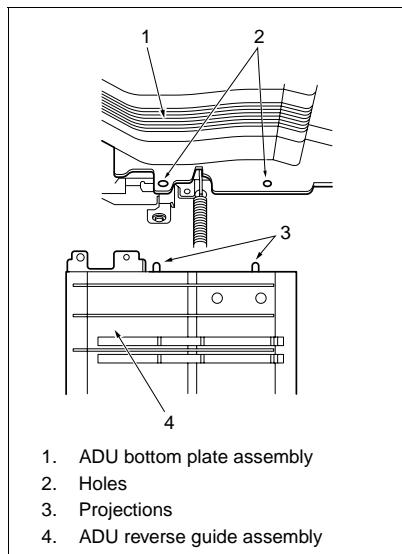
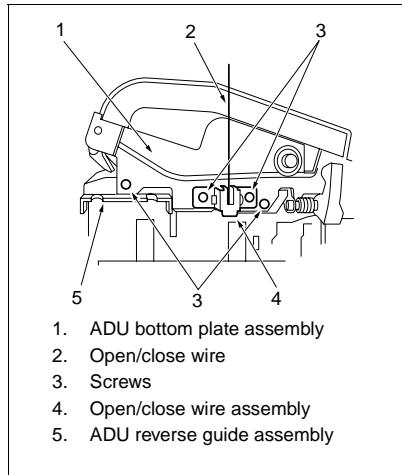
- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the ADU cover.
- (4) Remove one screw to remove the ground plate.
- (5) Remove the open/close spring from the paper exit side open/close wire.



- (6) Remove two screws to remove the open/close wire assembly.

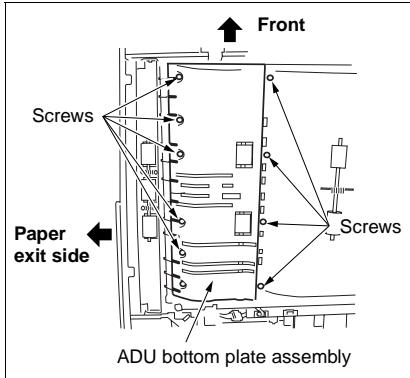
- (7) Remove two screws to remove the ADU reverse guide assembly.

Caution: When reinstalling, align the projection on the rear of the ADU reverse guide assembly with the hole on the ADU bottom plate assembly.



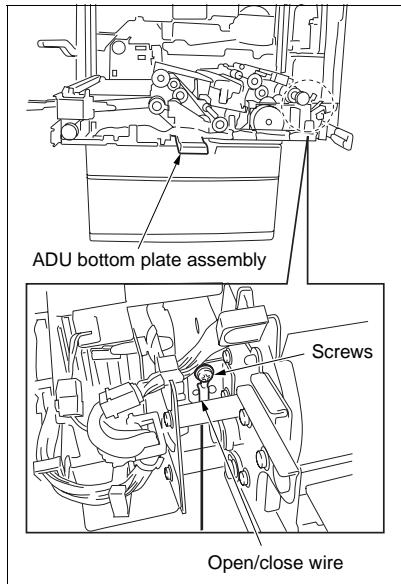
ADU UNIT

- (8) Remove the nine screws illustrated from the bottom of the ADU stand.

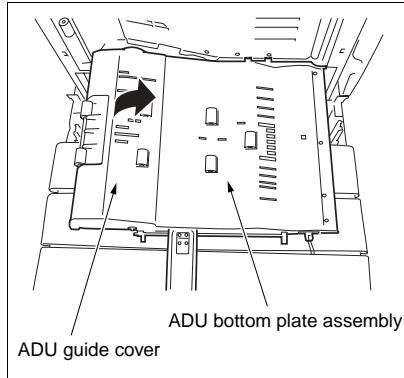


- (9) Remove one screw while holding the ADU bottom plate assembly to remove the paper feed side open/close wire.

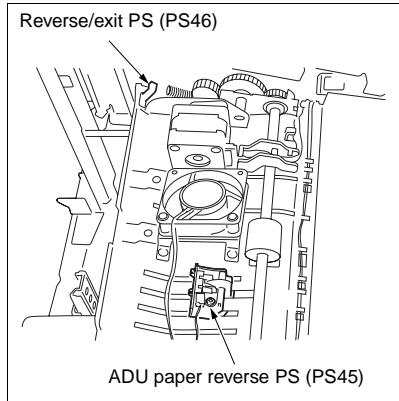
Caution: Be sure to hold ADU bottom plate assembly when removing the screws because the ADU bottom plate assembly becomes free when the paper feed side open/close wire is removed.



- (10) Lower the ADU bottom plate assembly straight down and remove the ADU guide cover.



- (11) Clean the ADU paper reverse PS (PS45) and reverse/exit PS (PS46) with a blower brush.



- (12) Reinstall the above parts following the removal steps in reverse.

[10] Removing and Reinstalling the ADU Reverse Roller

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

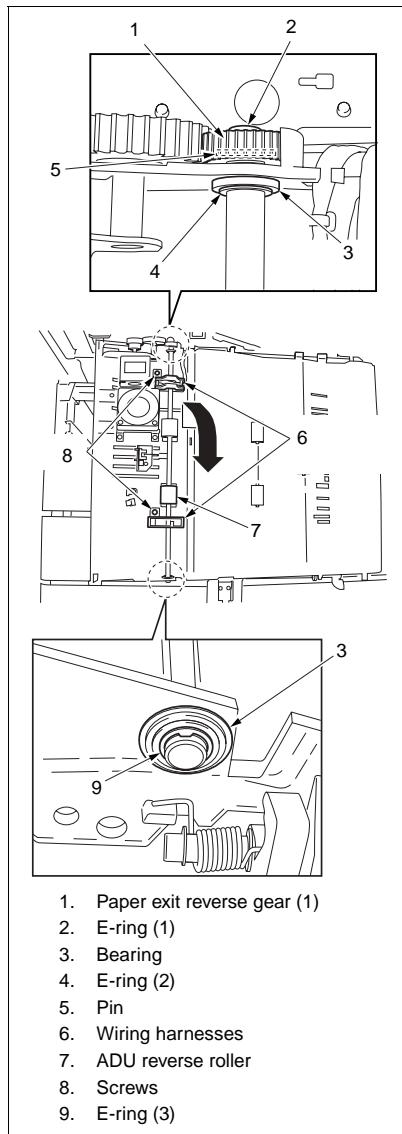
⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the ADU cover.
- (4) Remove the ADU guide cover.
- (5) Remove the screw to remove two wiring harnesses.
- (6) Remove E-ring (1) to remove the paper eject reverse gear (1) and pin.
- (7) Remove E-ring (2) to remove the rear side bearing.
- (8) Remove E-ring (3) to remove the front side bearing.

- (9) Slide the ADU reverse roller to the upper side and then to the lower side to slide it out.



- (10) Reinstall the above parts following the removal steps in reverse.

ADU UNIT

[11] Removing and Reinstalling the ADU Stand

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Warning:

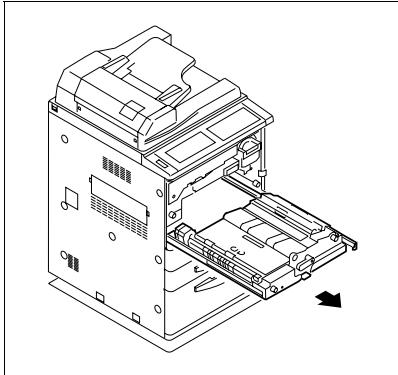
Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

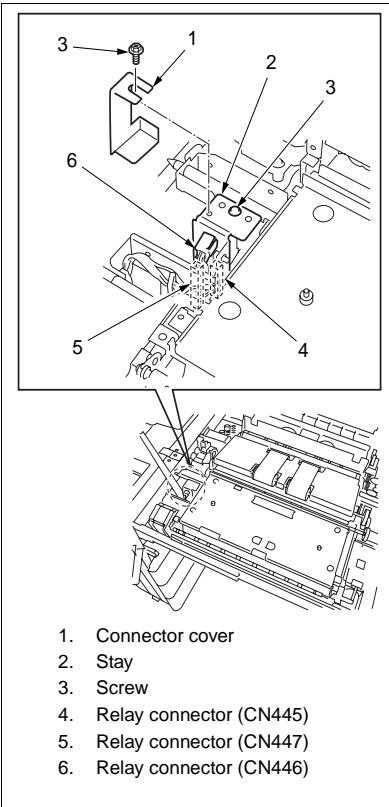
- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT.")
- (4) Remove the second paper feed unit.
- (5) Remove the front right door and the front left door. (See "EXTERNAL SECTION.")



- (6) Remove one screw to remove the connector cover.
- (7) Remove the screw to loosen the stay.

- (8) Disconnect the three relay connectors (CN445, 446, 447).

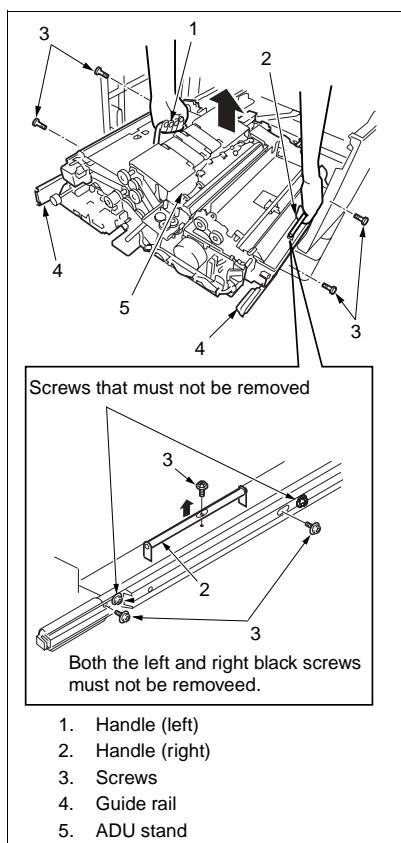
Caution: Disconnect each connector on the ADU stand.



- (9) Remove one screw to release the lock of the handle(right).
 (10) Remove the two screws securing the guide rails on the paper feed side and paper exit side.

Caution: Do not mistake the screws securing the guide rails for screws(black) that must not be removed. (Black screws must not be removed)

- (11) To remove the ADU stand, one person holds the handle(right) on the paper-feed side, and the other holds the handle(left) on the fixing unit. Then, they lift up the ADU stand.



- (12) Reinstall the above parts following the removal steps in reverse.

[12] Removing and Reinstalling the Pre-registration Roller

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Warning:

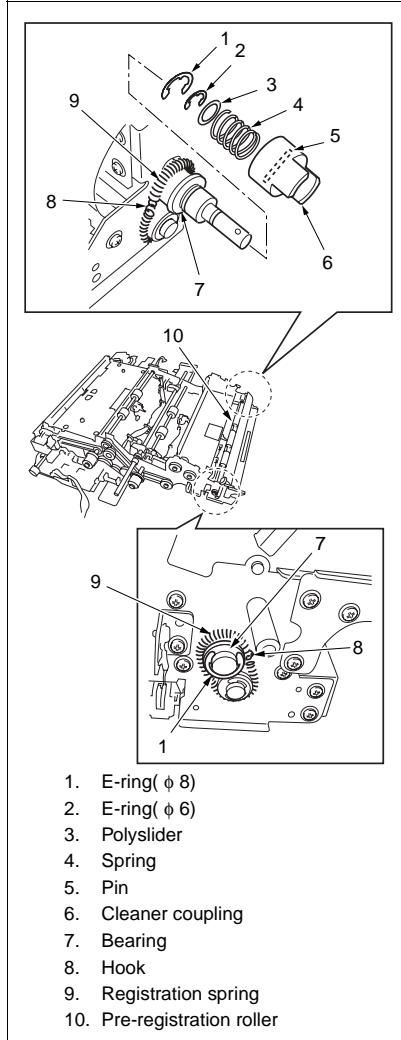
Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the front and rear registration springs.
- Caution:** When reinstalling, pay attention to the location of the registration spring hook.
- (2) Remove the E-ring ($\phi 6$)
 - (3) Press the cleaner coupling and pull out the pin.
 - (4) Remove the spring.
 - (5) Remove the front and rear E-rings ($\phi 8$) and remove each bearing.
 - (6) Slide the ADU pre-registration roller back and forth to remove.



- (7) Reinstall the above parts following the removal steps in reverse.

[13] Removing and Reinstalling the ADU Conveyance Roller 3 and 4

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Warning:

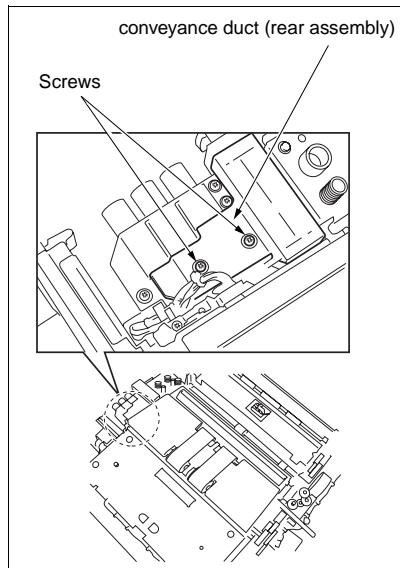
Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

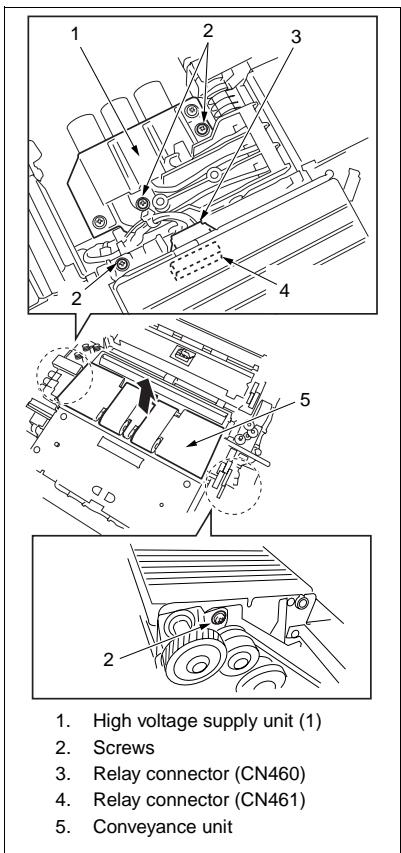
- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT SECTION.")
- (4) Remove the second paper feed unit.
- (5) Remove the ADU stand.
- (6) Remove two screws to detach the conveyance duct (rear assembly).



- (7) Remove two screws to release the high voltage supply unit (1).
 (8) Disconnect the two connectors (CN460, 461).

Caution: Each relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.

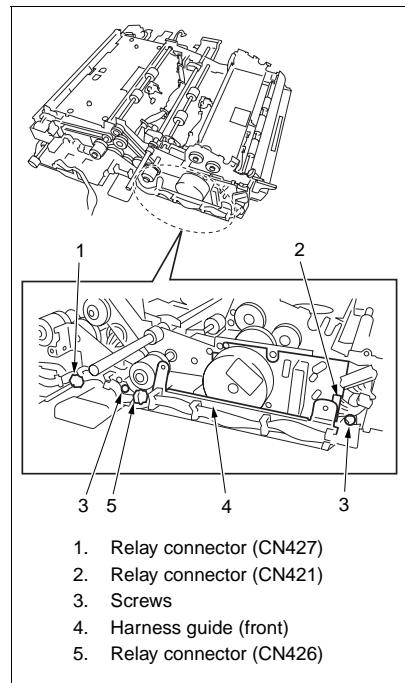
- (9) Remove two screws to remove the conveyance unit.



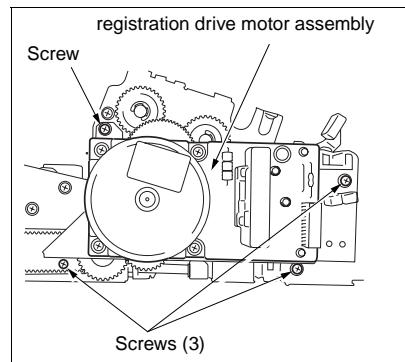
- (10) Disconnect the three connectors (CN421, 426, 427)

Caution: Each relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.

- (11) Remove two screws to remove the harness guide plate (front).

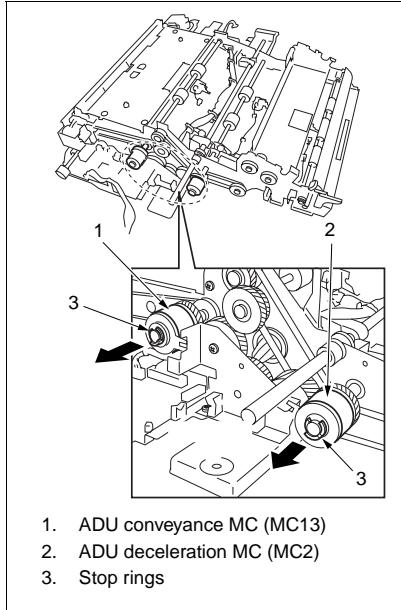


- (12) Remove four screws to detach the registration drive motor assembly.



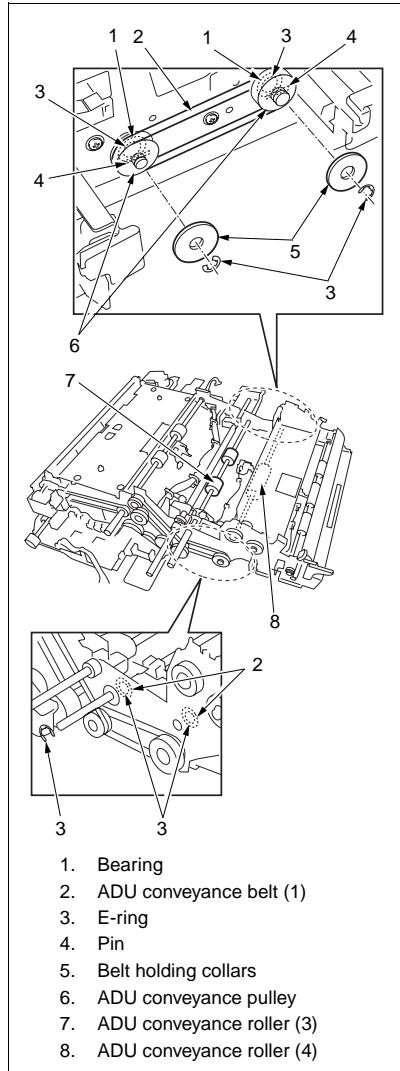
ADU UNIT

- (13) Remove the stop rings to remove the ADU deceleration MC (MC2) and ADU conveyance MC (MC13).



- (14) Remove the E-ring at the rear, two belt holding collars, ADU conveyance belt (1), and two ADU conveyance pulleys.
 (15) Remove the pin from each roller shaft.
 (16) Remove the E-ring and bearing on the inside of the ADU conveyance pulley.
 (17) Remove the E-ring on the ADU conveyance roller(3) shaft.

- (18) Remove the front E-ring and bearing, and remove the ADU conveyance roller (3) and ADU conveyance roller (4) by sliding them back and forth.



- (19) Reinstall the above parts following the removal steps in reverse.

[14] Removing and Reinstalling the ADU Conveyanece Roller 1 and 2

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Warning:

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

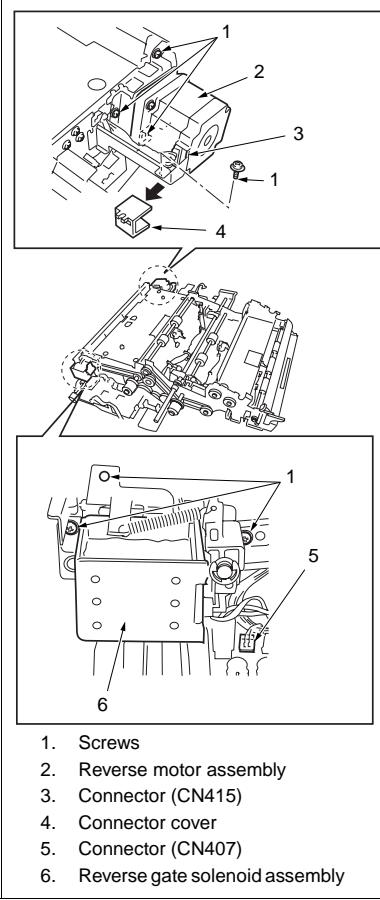
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT.")
- (4) Remove the second paper feed unit.
- (5) Remove the ADU stand.
- (6) Remove the conveyance unit.
- (7) Remove the ADU conveyance MC(MC13).
- (8) Disconnect the connector (CN407).
- (9) Remove three screws to detach the reverse gate solenoid assembly.
- (10) Remove one screw to remove the connector cover.

(11) Disconnect the connector (CN415).

(12) Remove three screws to detach the reverse motor assembly.

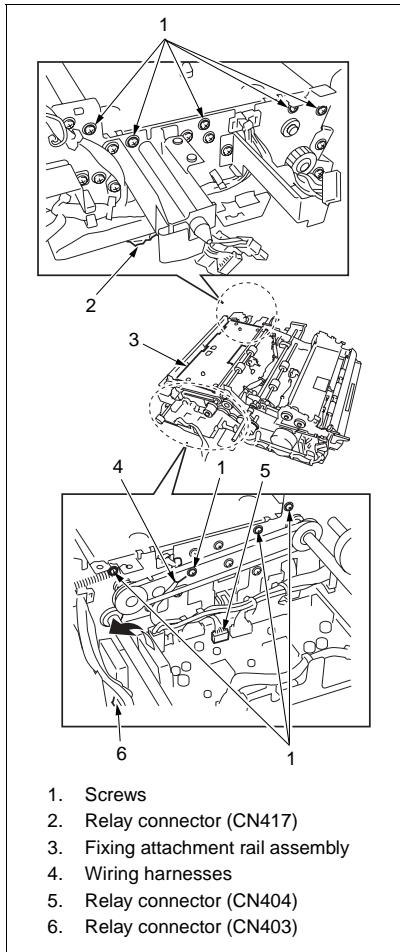


ADU UNIT

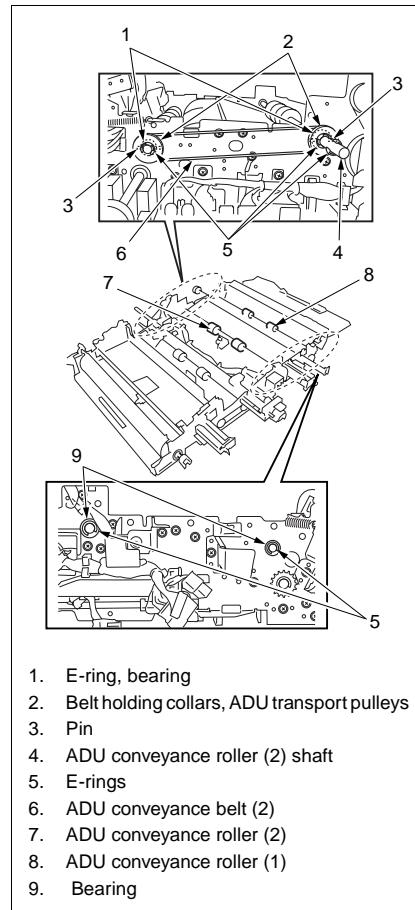
- (13) Disconnect the two connectors (CN403, 404).
 (14) Disconnect the connector (CN417).

Caution: Each relay connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.

- (15) Remove one screw to remove the wiring harness for CN404.
 (16) Remove eight screws (three front, five rear) and turn over the fixing attachment rail assembly to the paper exit side.



- (17) Remove the E-ring from ADU conveyance roller (2) shaft.
 (18) Remove the front E-ring, two belt holding collars, ADU conveyance belt (2), and two ADU conveyance pulleys.
 (19) Remove the pin from the shaft of each roller.
 (20) Remove the E-ring and bearing inside the ADU conveyance pulley.
 (21) Remove the rear E-ring and bearing, and remove the ADU conveyance roller (1) and ADU conveyance roller (2) by sliding them back and forth.



- (22) Reinstall the above parts following the removal steps in reverse.

[15] Removing and Reinstalling the Paper Reverse/Exit Roller

⚠ Warning:

The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Warning:

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

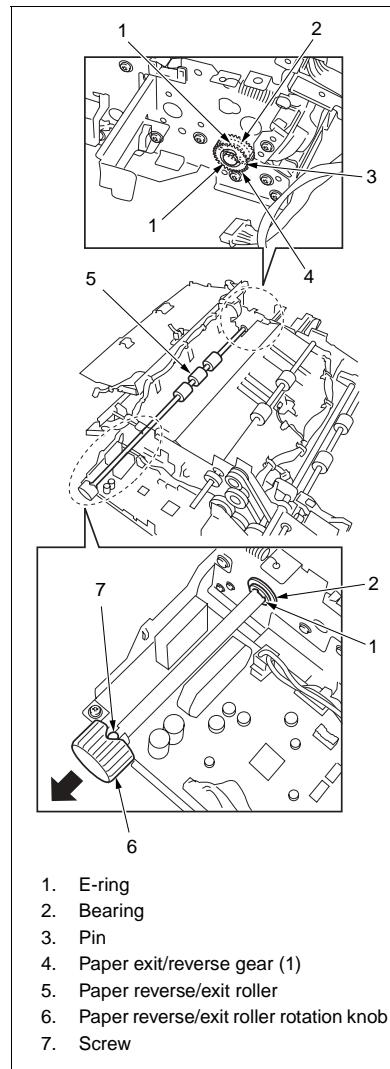
⚠ Caution:

Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT.")
- (4) Remove the second paper feed unit.
- (5) Remove the ADU stand.
- (6) Remove the conveyance unit.
- (7) Remove the ADU conveyance roller (1).
- (8) Remove the screw to remove the paper reverse/exit roller rotation knob.
- (9) Remove the front E-ring and remove the bearing.
- (10) Remove the rear E-ring to remove the paper exit/reverse gear (1) and pin.
- (11) Remove the E-ring and remove the bearing.

- (12) Remove the paper reverse/exit roller by sliding it back and forth.



- (13) Reinstall the above parts following the removal steps in reverse.

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FIXING UNIT

[1] Removing and Reinstalling the Fixing Unit

⚠ Warning:

Do not touch the fixing unit immediately after turning OFF the main power switch because it is very hot and you may suffer burns. Wait until the fixing unit has cooled down sufficiently before working on it.

⚠ Caution:

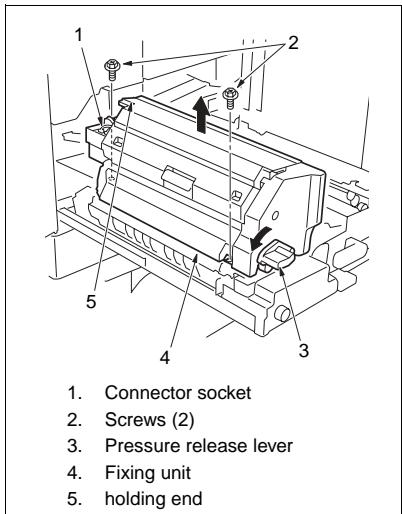
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand. (See "ADU UNIT.")
- (2) Turn the pressure release lever counterclockwise to release the pressure.
- (3) Remove two screws and remove the fixing unit by lifting.

Caution: Do not hold the connector socket.

Remove by holding the pressure release lever and the holding end at the far side.



- (4) Reinstall the above parts following the removal steps in reverse.

Caution: After installing the fixing unit, turn the pressure release lever clockwise and return it to the original position.

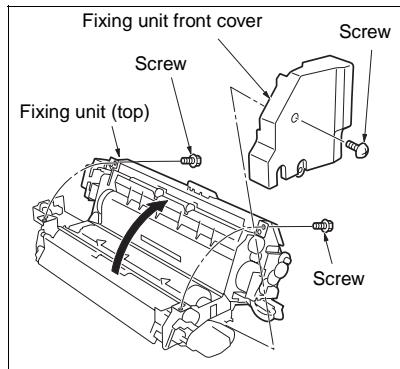
[2] Removing and Reinstalling the Fixing Unit (Top)

⚠ Caution:

Before opening the fixing unit (top), check that the pressure release lever is turned counterclockwise and the bottom roller pressure is released.

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove one screw to detach the fixing unit front cover.
- (3) Remove two screws to open the fixing unit (top).

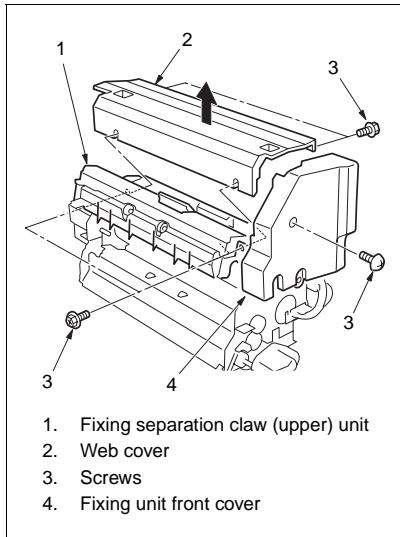


- (4) Reinstall the above parts following the removal steps in reverse.

FIXING UNIT

[3] Removing and Reinstalling the Web Cover**a. Procedure**

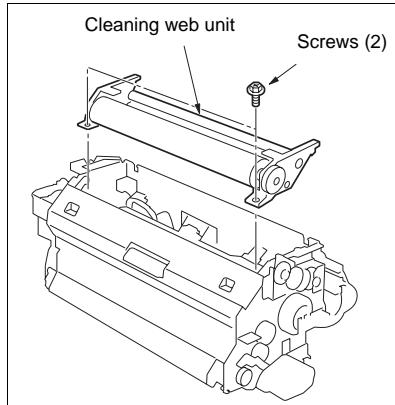
- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Open the fixing separation claw (upper) unit and remove two screws inside.
- (4) Remove two screws to detach the web cover.



- (5) Reinstall the above parts following the removal steps in reverse.

[4] Removing and Reinstalling the Cleaning Web**a. Procedure**

- (1) Draw out the ADU stand. (See "ADU UNIT.")
- (2) Remove the web cover.
- (3) Remove two screws to remove the cleaning web unit.



- (4) Reinstall the above parts following the removal steps in reverse.

Caution1: When reinstalling, make sure the cleaning web does not sag.

Caution2: When reinstalling, wind it until the red line of the cleaning web is fully wound to the take-up shaft.

Caution3: After replacing the cleaning web, make sure to reset the count value of the fixing unit cleaning web by "Copy Count by Parts to be Replaced (Fixed Parts)" in the 25 mode.

[5] Replacing the Fixing Heater Lamps (L2, L3)

Caution:

Do not touch the fixing heater lamp with bare hands.

Caution1: Install the heater lamp with the manufacturers mark facing the rear.

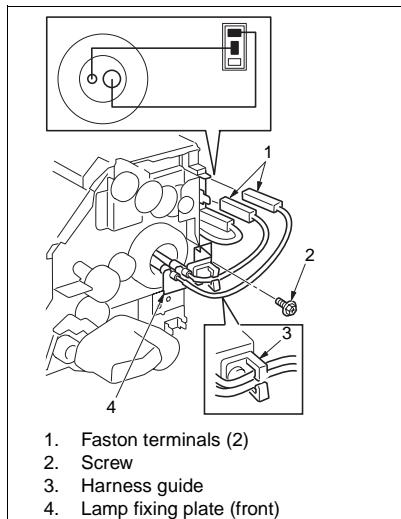
Caution2: The heater lamp should not touch the inner surface of the upper roller.

Caution3: When replacing the heater lamp, be sure to insert the lamp end in the lamp terminal securely. Also, check that the Faston terminals are connected correctly.

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Remove the screw at the front to remove the lamp fixing plate (front).
- (4) Remove the front lamp harness from the harness guide to remove the two Faston terminals.

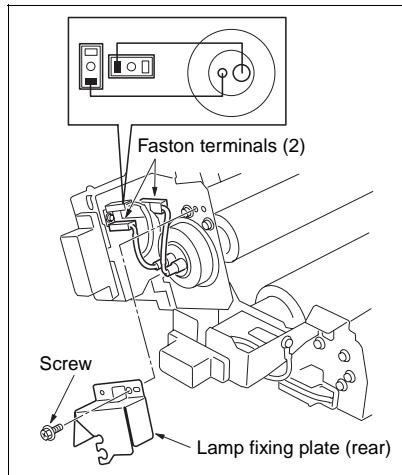
Caution: When removing the Faston terminals, be sure to hold the connector. Connector cannot be removed by pulling on the harness.



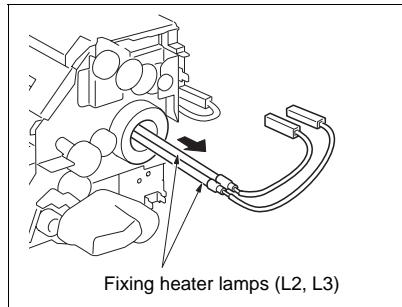
- (5) Open the fixing unit (top).
- (6) Remove the screw at the far side to remove the lamp fixing plate (rear).

- (7) Remove the two Faston terminals of the far side lamp.

Caution: When removing the Faston terminals, be sure to hold the connector. Connector cannot be removed by pulling on the harness.



- (8) Pull out the fixing heater lamps (L2, L3) from the front side of the fixing upper roller.



- (9) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the lamps, pay attention to their orientation. The size of the lamp terminal mounting hole in the front lamp fixing plate is different from that in the rear lamp fixing plate. The lamp cannot be installed properly if it is facing the opposite direction.

[6] Replacing the Fixing Heater Lamp(L4)

Caution:

Do not touch the fixing heater lamp with bare hands.

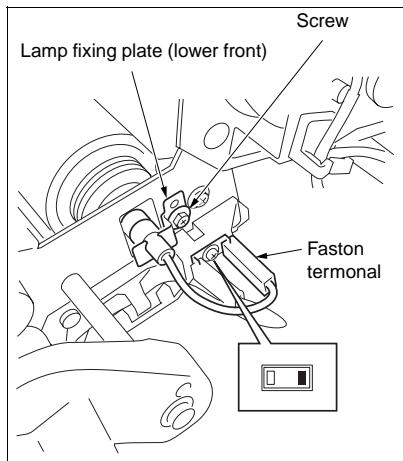
Caution1: Install the heater lamp with the manufacturers mark facing the rear.

Caution2: The heater lamp should not touch the inner surface of the upper roller.

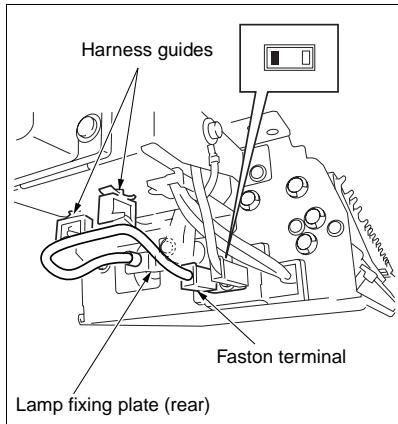
Caution3: When replacing the heater lamp, be sure to insert the lamp end in the lamp terminal securely. Also, check that the Faston terminals are connected properly.

a. Procedure

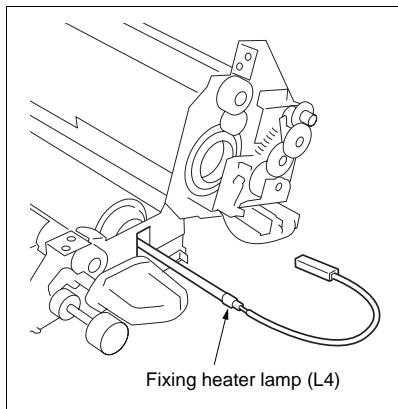
- (1) Open the fixing cover (upper).
- (2) Remove the screw at front to remove the lamp fixing plate (lower front).
- (3) Remove the Faston terminal.



- (4) Remove the rear lamp harness from the two harness guide to remove the Faston terminal.



- (5) Pull out the fixing heater lamp (L4) from the front side of the fixing lower roller.



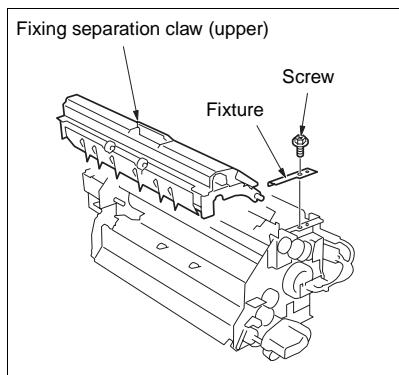
- (6) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the lamp, pay attention to its orientation. The lamp cannot be installed properly if it is facing the opposite direction.

[7] Removing and Reinstalling the Fixing Separation Claw (Upper) Unit and Fixing Separation Claws (Upper)

a. Procedure

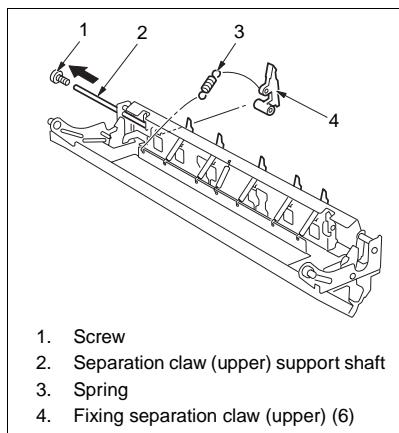
- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Remove the web cover.
- (4) Remove the screw to detach the fixture.
- (5) Remove the fixing separation claw (upper) unit



- (6) Remove the screw to remove the upper separation claw support shaft from the fixing separation claw (upper) unit.

Caution: Be careful when removing the shaft because it bends easily.

- (7) Remove six springs attached to the fixing separation claw (upper) unit.
- (8) Remove six fixing separation claws (upper).



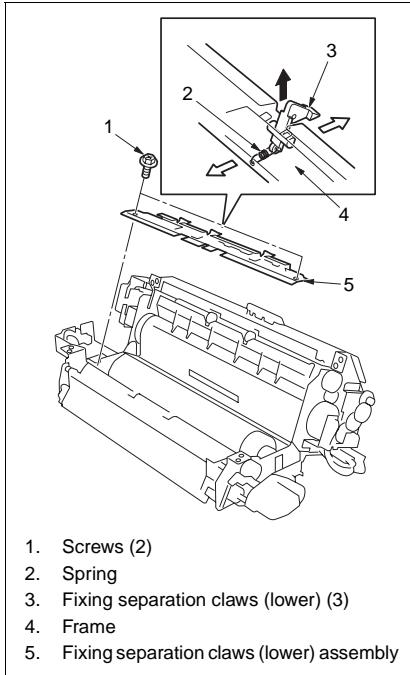
- (9) Reinstall the above parts following the removal steps in reverse.

Caution: After installing the fixing separation claw (upper), move the upper claws with your finger and check that they return with the force of the spring.

FIXING UNIT

[8] Removing and Reinstalling the Fixing Separation Claw (Lower) Unit and Fixing Separation Claws (Lower)**a. Procedure**

- (1) Remove the fixing unit.
- (2) Open the fixing unit (upper).
- (3) Remove two screws to detach the fixing separation claw (lower) assembly.
- (4) Remove the three springs from the three fixing separation claws (lower).
- (5) Slide the frame holding the fixing separation claws (lower) and remove the three claws.

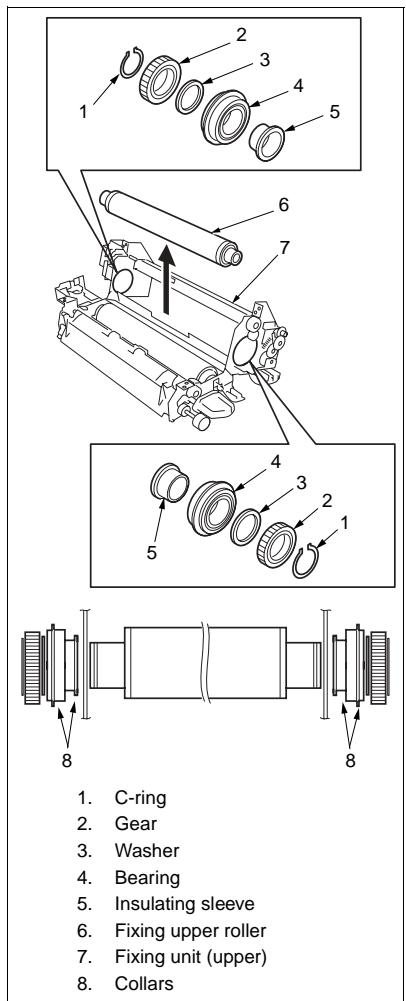


- (6) Reinstall the above parts following the removal steps in reverse.

Caution: After installing the fixing separation claw (lower), check that the frame moves smoothly.

[9] Removing and Reinstalling the Fixing Upper Roller**a. Procedure**

- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Remove the fixing separation claw (upper) unit.
- (4) Open the fixing unit (top).
- (5) Remove the fixing heater lamps (L2, L3).
- (6) Remove the two C-rings, two gears, two bearings, two washers and two insulating sleeves from the fixing upper roller.
- (7) Remove the fixing upper roller from the frame.



- (8) Reinstall the above parts following the removal steps in reverse.

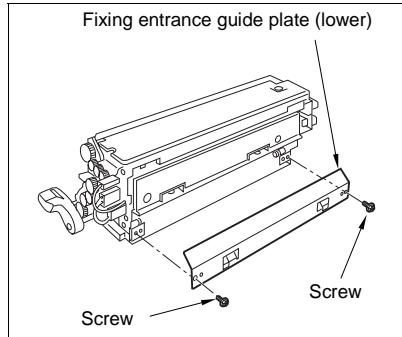
Caution1: Before reinstalling the insulating sleeve, coat the inside with Tri-flow.

Caution2: Reinstall the bearings and insulating sleeves with the collars facing the directions shown in the figure.

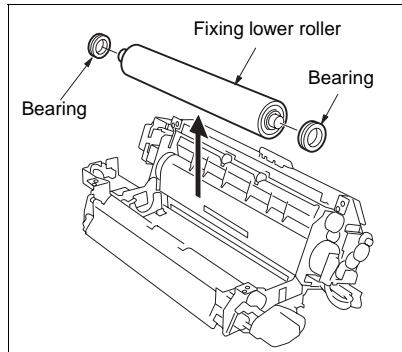
[10] Removing and Reinstalling the Fixing Lower Roller

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove two screws to remove the fixing entrance guide plate (lower)



- (3) Remove the fixing separation claw (lower) unit.
- (4) Remove the fixing lower roller upward.
- (5) Remove two bearings from the fixing lower roller.



- (6) Reinstall the above parts following the removal steps in reverse.

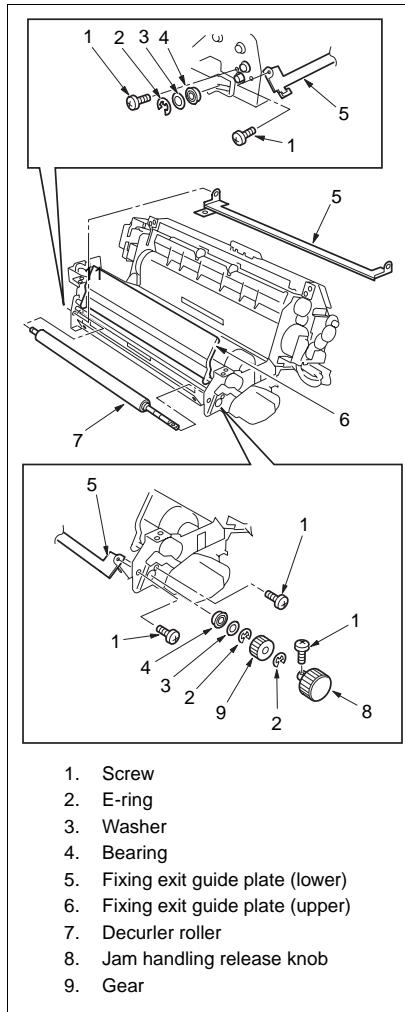
Caution: The fixing entrance guide plate (lower) should be pressed against the fixing upper roller bearing when installing.

FIXING UNIT

[11] Removing and Reinstalling the Decurler roller**a. Procedure**

- (1) Remove the fixing unit.
- (2) Open the fixing unit (top).
- (3) Lift the fixing exit guide plate (upper) and remove two screws to remove the fixing exit guide plate (lower).
- (4) Remove the screw to detach the jam handling release knob.
- (5) From the front side, remove one E-ring, one gear, one E-ring, one washer, one screw, and bearing in this order.

- (6) From the rear side, remove one E-ring, one washer, one screw, and bearing in this order and then remove the decurler roller from the frame.



- (7) Reinstall the above parts following the removal steps in reverse.

Caution: When reinstalling, check that the gear is installed correctly.

[12] Removing and Reinstalling the Fixing Temperature Sensors 1 and 2

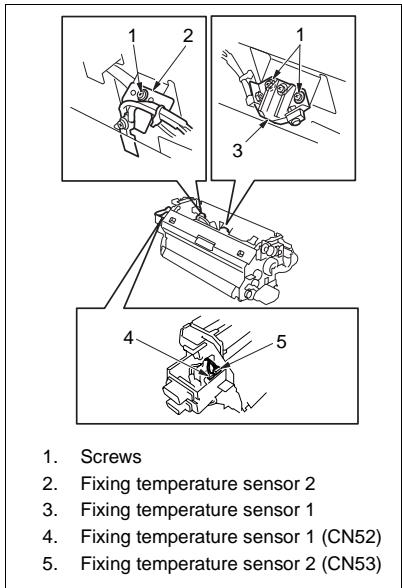
Caution1: After reinstalling fixing temperature sensor 2, make sure that the sensor touches the fixing upper roller.

Caution2: Make sure the sensor wires do not touch the fixing upper roller.

Caution3: When reinstalling fixing temperature sensor 1, adjust its position using the positioning jig (4024-2990-01) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

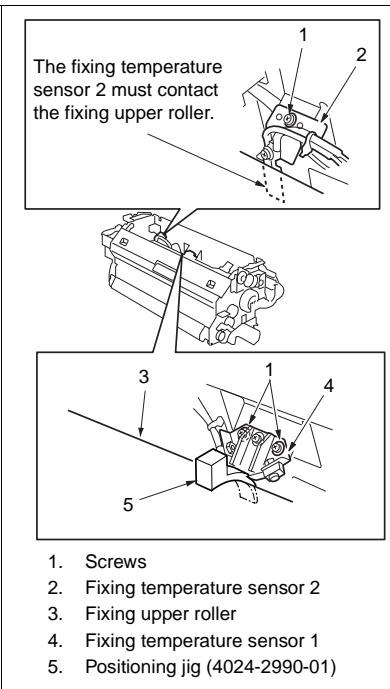
a. Removal procedure

- (1) Remove the fixing unit.
- (2) Remove the web cover.
- (3) Remove the cleaning web.
- (4) Disconnect the two relay connectors (fixing temperature sensor 1, CN52; fixing temperature sensor 2, CN53) and release the sensor wires from the cable guides.
- (5) Remove two screws to detach fixing temperature sensor 1.
- (6) Remove one screw to detach fixing temperature sensor 2.



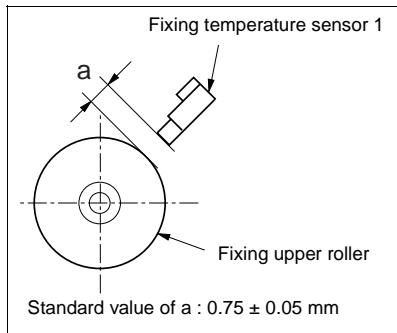
b. Reinstallation procedure

- (1) Secure fixing temperature sensor 2 to the fixing plate with a screw.
- (2) Make sure that fixing temperature sensor 2 touches the fixing upper roller. If they do not touch each other, be sure to bring the sensor in contact with the roller.
- (3) Set a fixing temperature sensor positioning jig between fixing temperature sensor 1 and fixing upper roller, and secure fixing temperature sensor 1 with two screws so that the distance between the sensor and roller is equal to the thickness of the jig.



FIXING UNIT

- f) Set the distance "a" between the fixing temperature sensor 1 and fixing upper roller so that it is equal to the thickness of the positioning jig.



- (4) Apply screw lock agent to the two screws securing fixing temperature sensor 1.
- (5) Secure the wires of fixing temperature sensors 1 and 2 in the wire guides and connect their connectors.
- (6) Reverse the removal procedure to reinstall other parts.

[13] Removing and Reinstalling the Thermostat/U (TS1)

Caution:

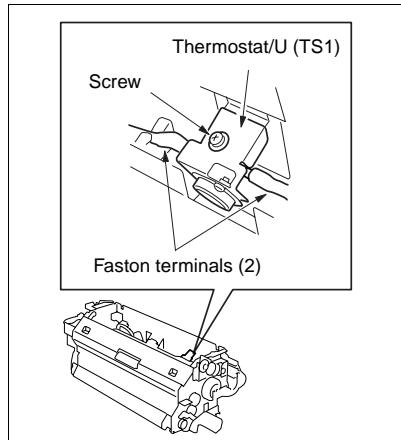
This is an important safety part. (P/N: SP00-0020) Be sure to observe the following cautions and steps when removing or reinstalling.

Caution1: After reinstalling the thermostat/U, make sure that its wires do not touch the fixing upper roller.

Caution2: When reinstalling the thermostat/U, adjust its position using the positioning jig (4024-2152-01) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

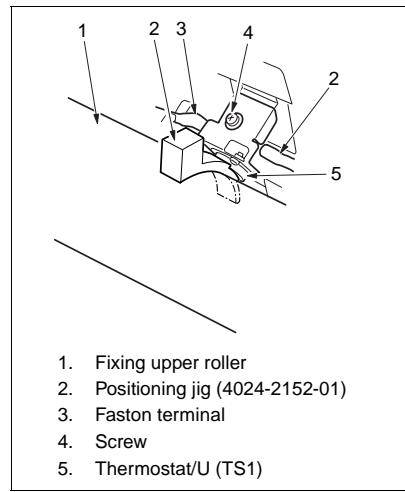
a. Removal procedure

- (1) Remove the fixing unit.
- (2) Remove the web cover.
- (3) Remove the cleaning web.
- (4) Remove one screw and two Faston terminals to detach the thermostat/U.

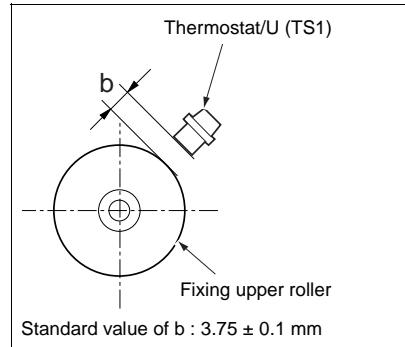


b. Reinstallation procedure

- (1) Connect two Faston terminals to the thermostat/U.
- (2) Set a thermostat positioning jig (4024-2152-01) between the thermostat/U and fixing upper roller and secure the thermostat/U with one screw so that the distance between the roller and thermostat/U is equal to the thickness of the jig.

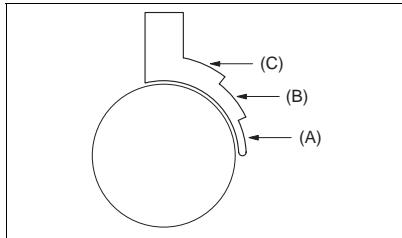


- (f) Set the distance "a" between the thermostat/U and fixing upper roller so that it is equal to the thickness (B) of the positioning jig.



FIXING UNIT

- g) When making the adjustment, make sure that the thermostat/U does not ride on the positioning jig (C).



- (3) Apply screw lock agent to the screw securing the thermostat/U.
- (4) Reverse the removal procedure to install other parts.

[14] Removing and Reinstalling the Thermostat/L (TS2)

Caution:

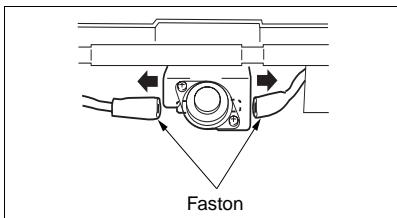
This is an important safety part. Be sure to observe the following cautions and steps when removing or reinstalling.

Caution1: After reinstalling the thermostat/L, make sure that its wires do not touch the fixing lower roller.

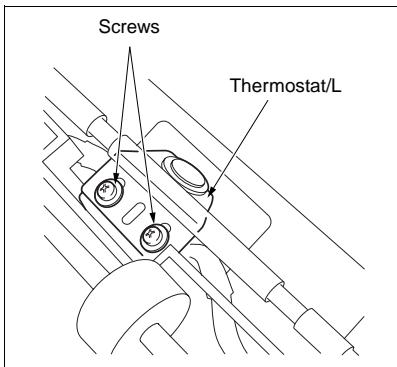
Caution2: When reinstalling the thermostat/L, adjust its position using the positioning jig (4024-2992-01) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

a. Removal procedure

- (1) Remove the fixing lower roller.
- (2) Close the fixing cover (top).
- (3) Remove the two Faston terminals of the thermostat/L through the fixing entrance side.

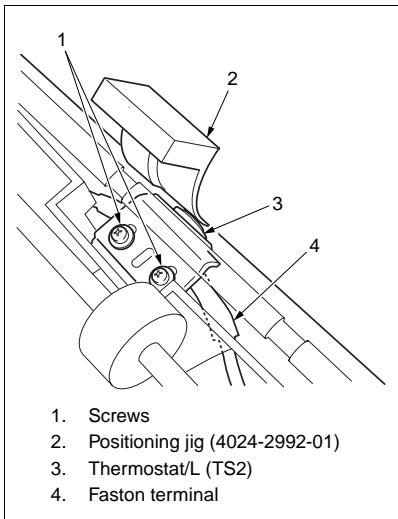


- (4) Open the fixing cover (top).
- (5) Remove two screws to remove the thermostat/L.

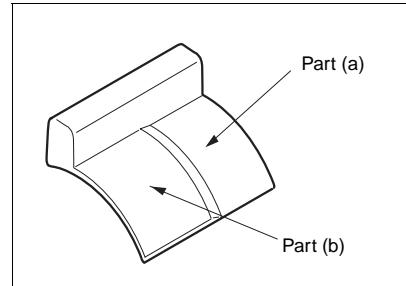


b. Reinstallation procedure

- (1) Set a part (a) thermostat/L positioning jig (4024-2992-01) between the thermostat/L and the fixing lower roller, and secure the thermostat/L with two screws so that the distance between the thermostat/L and roller is equal to the thickness of the jig.

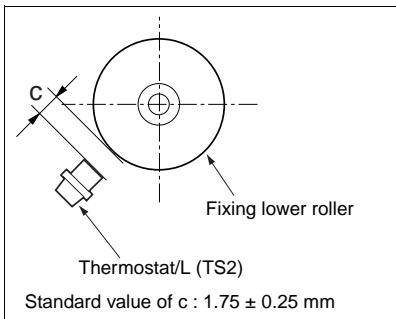


- (f) After setting the distance "b", remove the thermostat/L positioning jig, and make sure that the part (b) thermostat/L positioning jig cannot be inserted in a space between the fixing lower roller and the thermostat/L.



- (2) Apply screw lock agent to the two screws securing the thermostat/L.
(3) Reverse the removal procedure to reinstall other parts.

- e) Set the distance "b" between the thermostat/L and the fixing lower roller so that it is equal to the thickness of the positioning jig.



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EXTERNAL SECTION

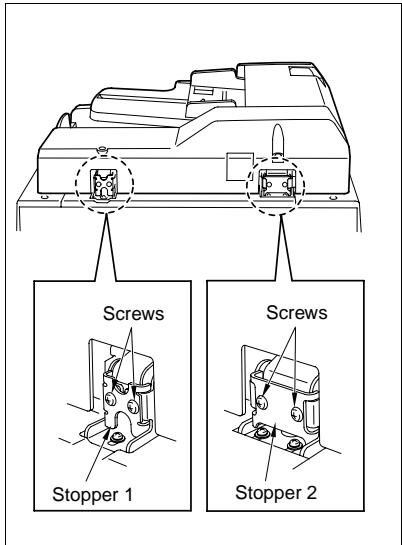
[1] Removing the RADF

Caution:

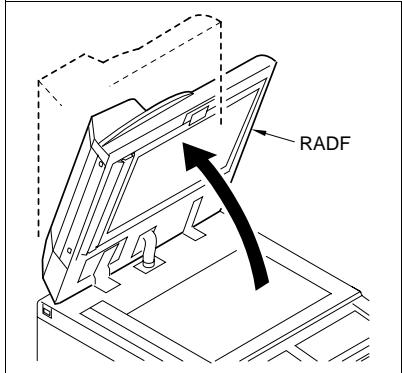
Make sure power cord of the main unit has been unplugged from the wall outlet.

a. Procedure

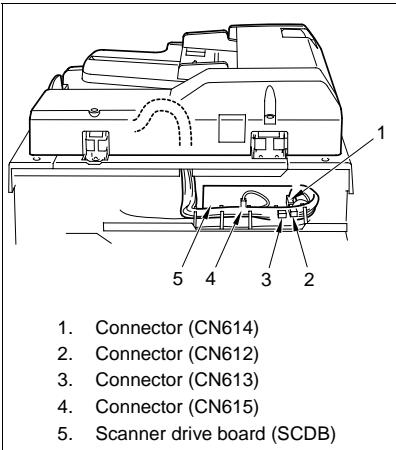
- (1) Remove the rear cover. (See the external section of the main body.)
- (2) Remove two screws to detach the two stoppers.



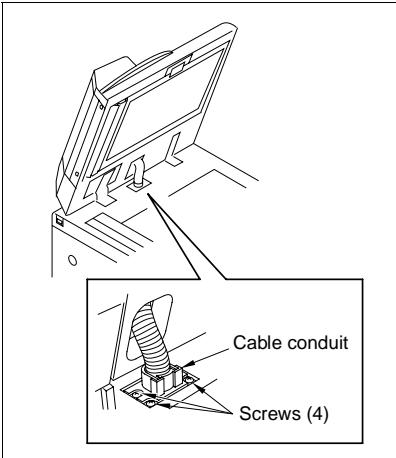
- (3) Open the RADF to the upright position.



- (4) Remove four connectors (CN612 to CN615) from the scanner drive board (SCDB) on the main body.

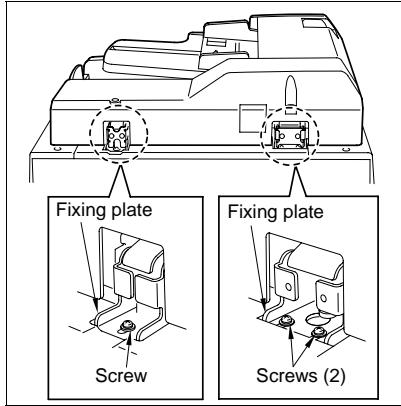


- (5) Remove four screws to detach the cable conduit.



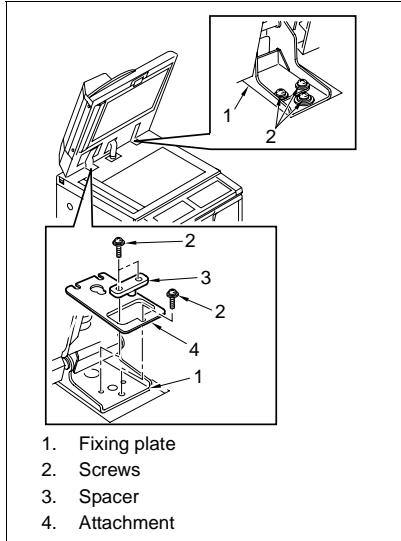
- (6) Draw the cable to the top of the main body.

- (7) Close the RADF. Remove three screws to detach each of two fixing plates.



- (8) Open the RADF to the upright position.
 (9) Remove two screws to detach the spacer and attachment from the left fixing plate.
 (10) Holding the RADF, remove four screws to detach two fixing plates and remove the RADF from the main body.

Caution: When fixing plates are removed, the RADF may fall down to the rear side. Be sure to hold the RADF.



1. Fixing plate
2. Screws
3. Spacer
4. Attachment

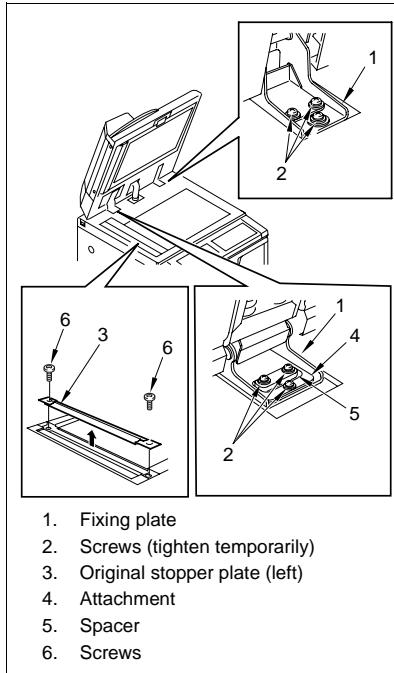
[2] Reinstalling the RADF

⚠ Caution:

Make sure power cord of the main unit has been unplugged from the wall outlet.

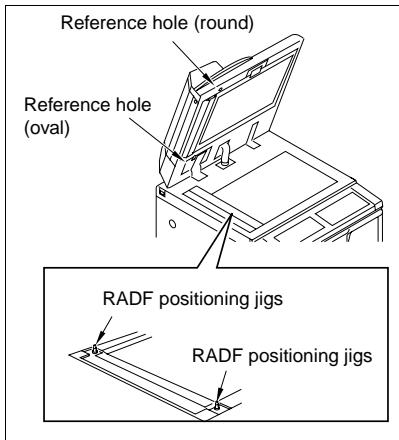
a. Procedure

- (1) Place the RADF on the top of the main unit and loosely secure each of the two fixing plates with four screws.
- (2) Secure the attachment and spacer to the left fixing plate, and loosely secure it with two screws.
- (3) Remove two screws to detach the original stopper plate (left).



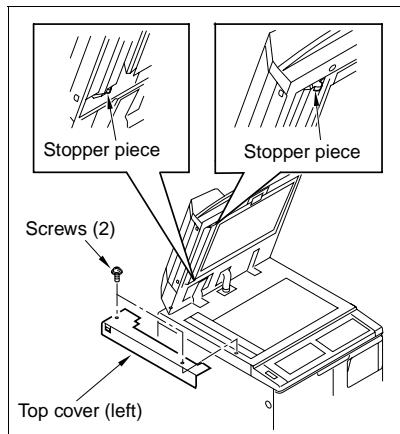
1. Fixing plate
 2. Screws (tighten temporarily)
 3. Original stopper plate (left)
 4. Attachment
 5. Spacer
 6. Screws
- (4) Follow the removal procedure in reverse, install the cable conduit and four relay connectors (CN612 to CN615).

- (5) Install two RADF positioning jigs in the mounting holes of the original stopper plates (left).
- (6) Close the RADF to mate the reference holes and RADF positioning jigs.
- (7) Install three screws to secure each of the two fixing plates with three screws following the removal procedure in reverse.
- (8) Open the RADF and tighten all of the six screws to secure the two fixing plates.

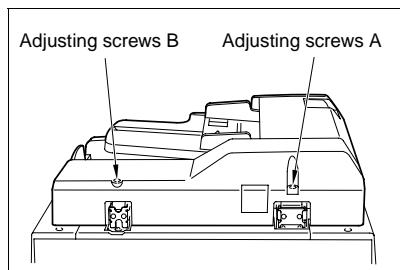


- (9) Remove the RADF positioning jigs and install the original stopper plate (left) with two screws.
- (10) Remove two screws and uninstall the top cover (left).

- (11) Close the RADF and check whether both stopper pieces on the RADF-side touch the slit glass.



- (12) If both stopper pieces do not touch the slit glass at the same time, make adjustments using adjusting screws A and B alternately.
- (13) Perform steps 11 and 12 repeatedly until the two stopper pieces touch the slit glass at the same time.



- (14) For further installation, follow the removal procedure in reverse.
- (15) Open and close angle of RADF can be changed from 70 degrees to 40 degrees when the stopper is attached to opposite direction.

ORIGINAL FEED/CONVEYANCE/EXIT SECTION

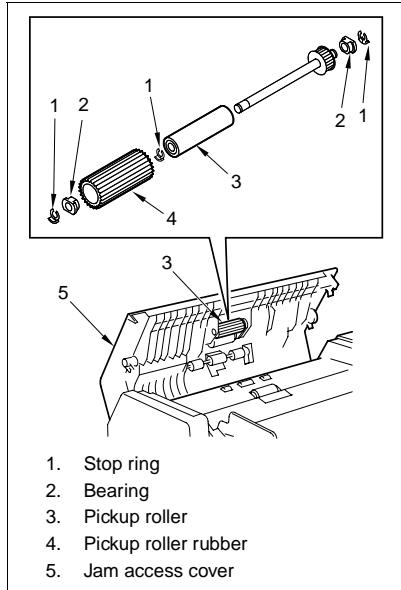
[1] Replacing the Pickup Roller and Conveyance Roller Rubber

⚠ Caution:

Make sure power cord of the main unit has been unplugged from the wall outlet.

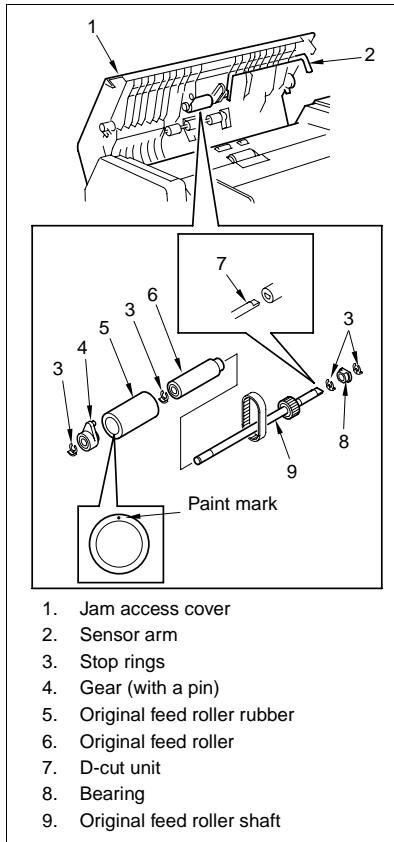
a. Procedure

- (1) Open the Jam access cover.
- (2) Remove three stop rings, shift each of the two bearings outward and detach them.
- (3) Remove the pickup roller assembly to detach the pickup roller.
- (4) Remove the pickup roller rubber from the pickup roller.



- (5) Remove four stop rings, and shift the gear (with a pin) and bearing outward.
- (6) Shift the original feed roller assembly to the left until it stops and lift it up to remove it.
- (7) Remove the gear (with a pin) and remove the original feed roller.

- (8) Remove the original feed roller rubber from the original feed roller.



- (9) Reinstall the above parts following the removal procedure in reverse.

Caution1: Make sure that the original feed roller is installed in the correct direction.

Caution2: Install the D-cut shaft of the original feed roller assembly while inserting it in the receiver side.

Caution3: Make sure not to damage the sensor arm during installation.

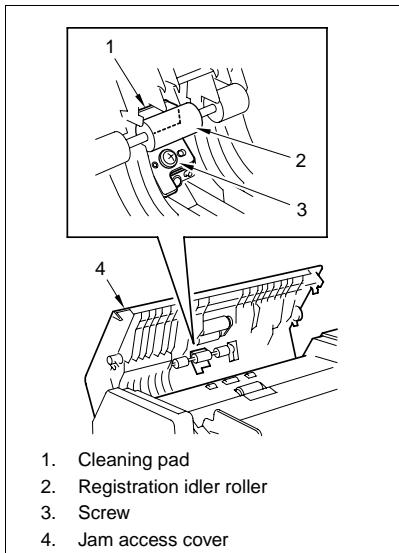
[2] Cleaning the Cleaning Pad

Caution:

Make sure power cord of the main unit has been unplugged from the wall outlet.

a. Procedure

- (1) Open the Jam access cover.
- (2) Remove one screw to detach the cleaning pad.
- (3) Using a blower brush, clean the cleaning pad.



- (4) Reinstall the above parts following the removal steps in reverse.

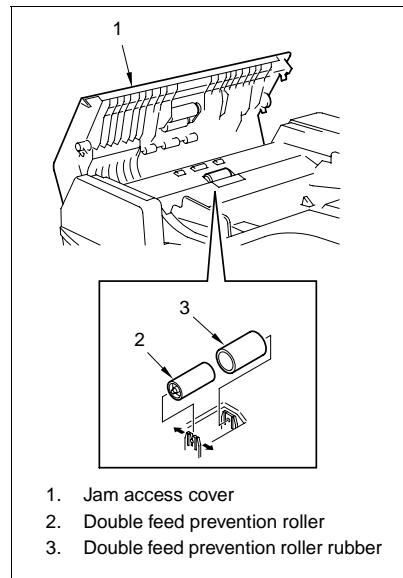
[3] Replacing the Double Feed Prevention Roller / Double Feed Prevention Roller Rubber

Caution:

Make sure power cord of the main unit has been unplugged from the wall outlet.

a. Procedure

- (1) Open the Jam access cover.
- (2) Open the retaining clip and remove the double feed prevention roller.
- (3) Remove the double feed prevention roller rubber from the double feed prevention roller.



- (4) Reinstall the above parts following the removal procedure in reverse.

Caution: Make sure that the double feed prevention roller is installed in the correct direction.

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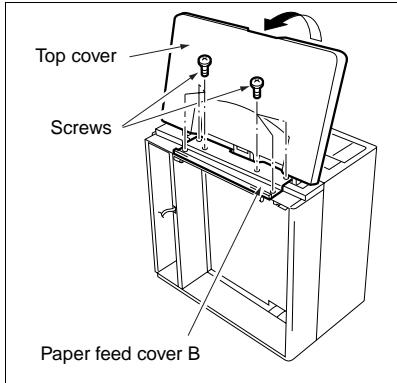
PAPER FEED SECTION

[1] Cleaning the Paper Dust Removing Brush

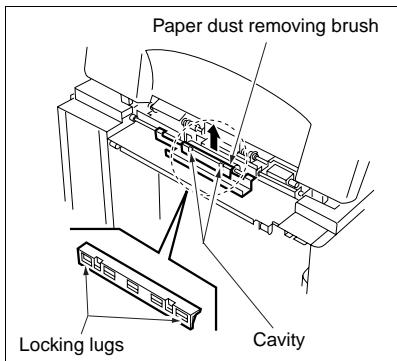
⚠ Caution: If LT is connected to the main body, make sure that main body power plug is disconnected from the power outlet.

a. Procedure

- (1) Open the top cover.
- (2) Remove six screws to detach the paper feed cover B.



- (3) Insert a flat bladed screwdriver in the cavities (in two locations) for paper dust removing brush to release the locking lugs, then remove the paper dust removing brush.



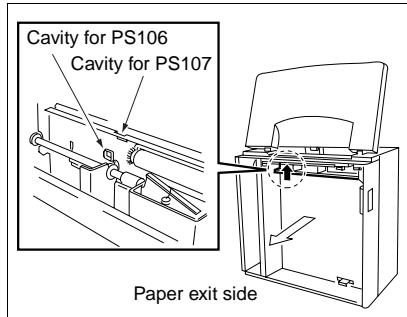
- (4) Clean the paper dust removing brush using a blower brush.
- (5) Reinstall the above parts following the removal steps in reverse.

[2] Cleaning the LT feed PS (PS106)/LT first paper feed PS (PS107)

⚠ Caution: If LT is connected to the main body, make sure that main body power plug is disconnected from the power outlet.

a. Procedure

- (1) Looking into the paper exit side of the LCT from below, and clean sensors through the cavity for LT feed PS (PS106) and the cavity for LT first paper feed (PS107) using a blower brush.

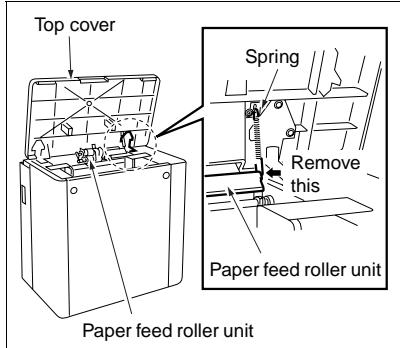


[3] Removing and Reinstalling the Paper Feed Roller Unit

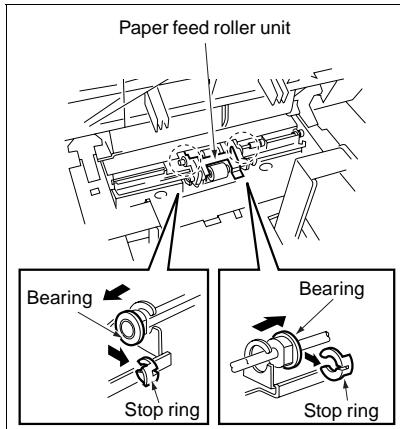
⚠ Caution: If LT is connected to the main body, make sure that main body power plug is disconnected from the power outlet.

a. Procedure

- (1) Open the top cover.
- (2) Remove the spring from the paper feed roller unit.



- (3) After removing two stop rings, remove the two bearings outward to remove the paper feed roller unit.



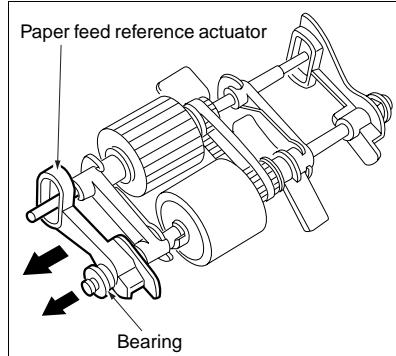
- (4) Reinstall the above parts following the removal steps in reverse.

[4] Replacing the Paper Feed Roller Rubber/Feed Roller Rubber

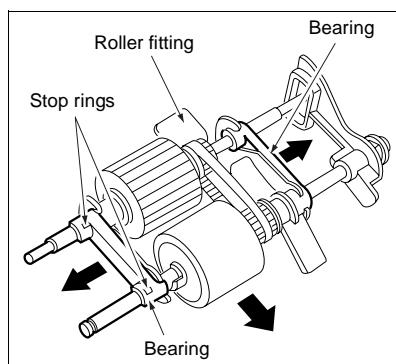
⚠ Caution: If LT is connected to the main body, make sure that main body power plug is disconnected from the power outlet.

a. Procedure

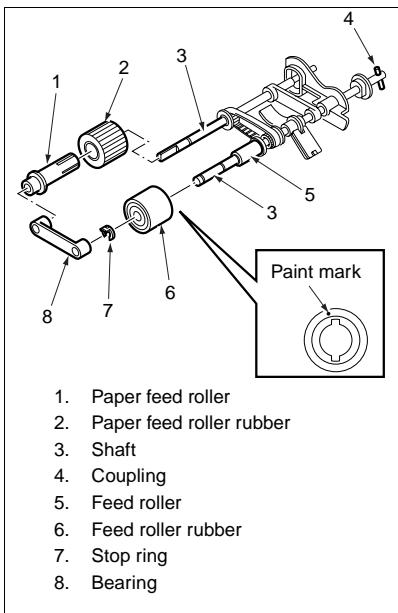
- (1) Remove the paper feed roller unit.
- (2) Remove the bearing and paper feed reference actuator.



- (3) Remove two stop rings.
- (4) Remove two bearings outward to detach the roller section from the roller fitting.



- (5) Remove the bearing from the opposite side of the coupling, then remove the paper feed roller from the shaft.
- (6) Remove the stop ring to pull the feed roller from the shaft.
- (7) Remove the rubber from each roller.



- (8) Reinstall the above parts following the removal steps in reverse.

Caution1: Make sure rollers and rubber portions are oriented properly when reinstalling them.

Caution2: Make sure the one-way clutch direction is correct.

Caution3: Check whether grease or the like is present on each roller.

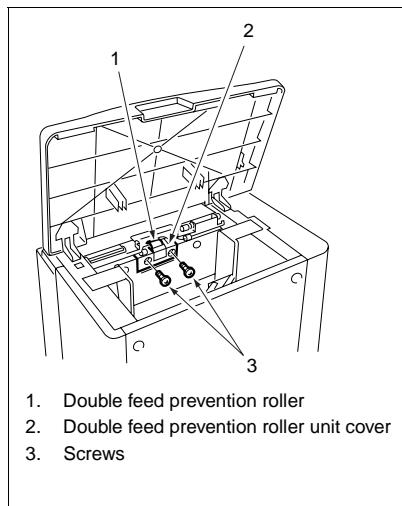
[5] Replacing the Double Feed Prevention Roller Rubber

Caution: If LT is connected to the main body, make sure that main body power plug is disconnected from the power outlet.

a. Procedure

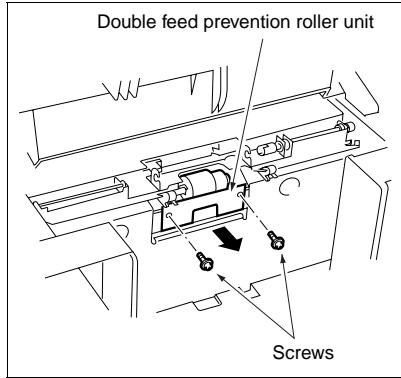
Caution: With the power held on, press the LT tray down switch (SW100) to move the up/down plate down to the bottom in advance.

- (1) Remove the paper feed roller unit.
- (2) Remove two screws to detach the double feed prevention roller unit cover.

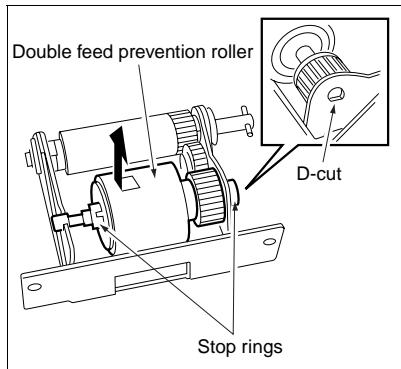


- (3) Remove two screws to detach the double feed prevention roller unit.

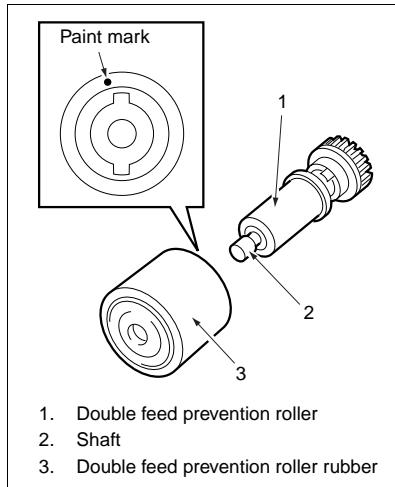
Caution: When reinstalling the double feed prevention roller unit, tighten the screws on the rear side first.



- (4) Remove two stop rings, fit the shaft into the D-cut in the fitting, and remove the double feed prevention roller together with the shaft.



- (5) Remove the double feed prevention roller rubber from the double feed prevention roller.



- (6) Reinstall the double feed prevention roller in the reverse order of the removal procedure.

Caution1: Make sure the double feed prevention roller rubber is oriented properly when reinstalling it.

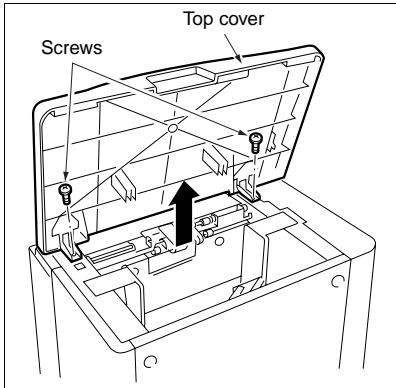
Caution2: Check whether scratch or the like is visible on the pet cover for the drive gear.

Caution3: Check whether grease or the like is present on double feed prevention roller.

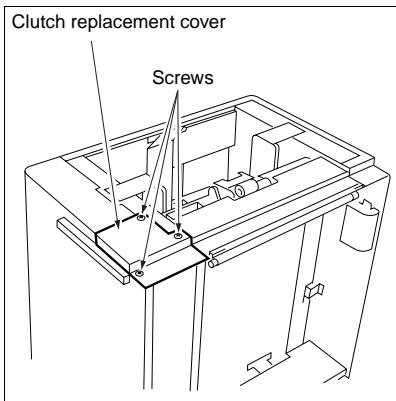
[6] Replacing the LT feed MC (MC101)/LT first paper feed MC (MC102)

a. Procedure

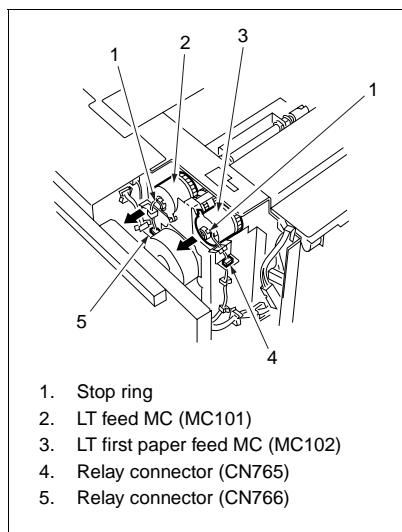
- (1) Open the top cover.
- (2) Remove the spring from the paper feed roller unit.
- (3) Remove two screws to detach the top cover.



- (4) Remove three screws to detach the clutch replacement cover.



- (5) Disconnect two relay connectors (CN765, CN766) of the clutches.
- (6) Remove the stop ring to detach each clutch.



- (7) Reinstall the above parts following the removal steps in reverse.

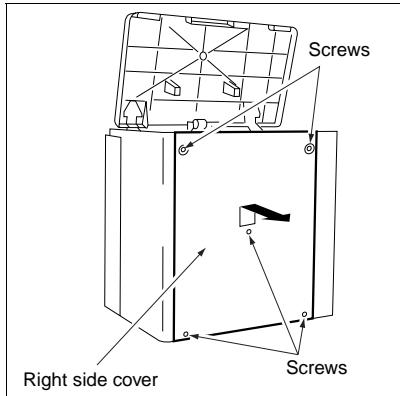
Caution: When installing each MC, make sure that the stopper of each clutch is on the predefined position.

[7] Replacing the C-403 Up/Down Wires

Caution: With the power held on, press the LT tray down switch (SW100) to move the up/down plate down to the bottom in advance.

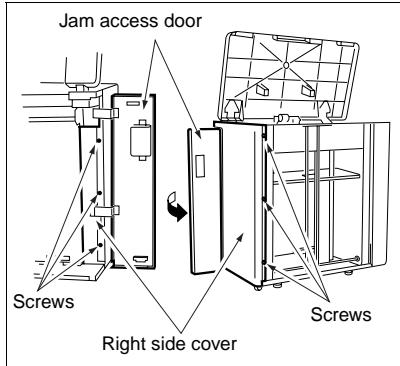
a. Procedure

- (1) Open the top cover.
- (2) Remove the clutch replacement cover.
- (3) Remove five screws to detach the right side cover.

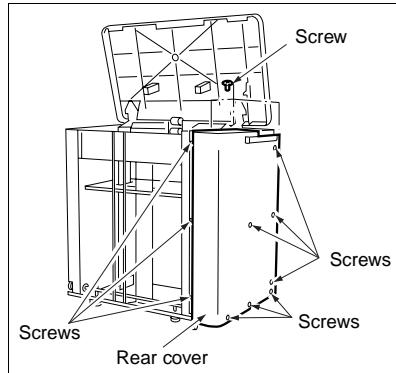


- (4) After opening the jam access door, remove six screws to detach the front cover.

Caution: When removing the front cover, close the jam access door after removing the screws.

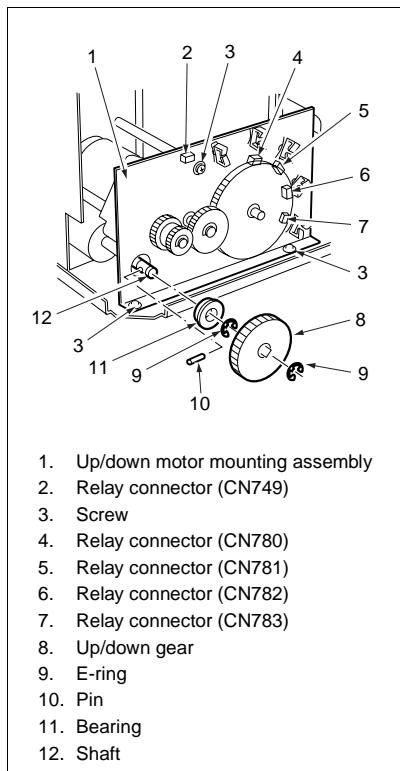


- (5) Remove twelve screws to detach the rear cover.



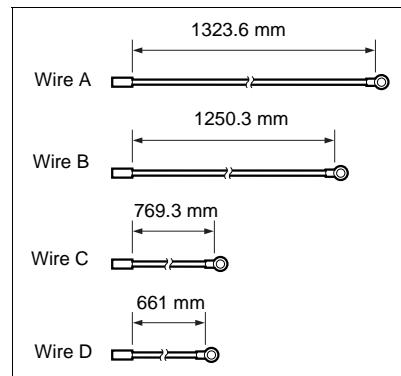
- (6) Remove the five relay connectors (CN749, CN780, CN781, CN782, CN783) to disconnect the wiring harness from the up/down motor mounting assembly.
- (7) Remove the E-ring to detach the up/down gear.
- (8) Pull the pin from the shaft.
- (9) Remove the E-ring to detach the bearing.

(10) Remove three screws to detach the up/down motor assembly.

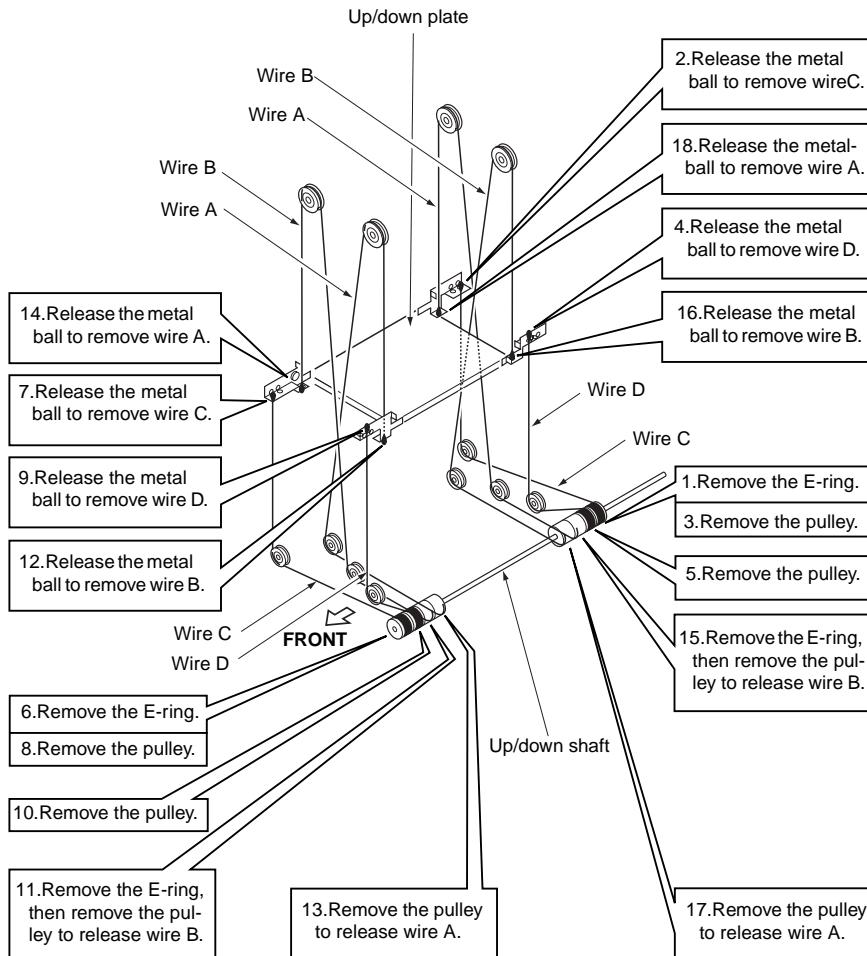


(11) Replace the up/down wire following the instructions in "Removing Up/Down Wires" and "Installing Up/Down Wires."

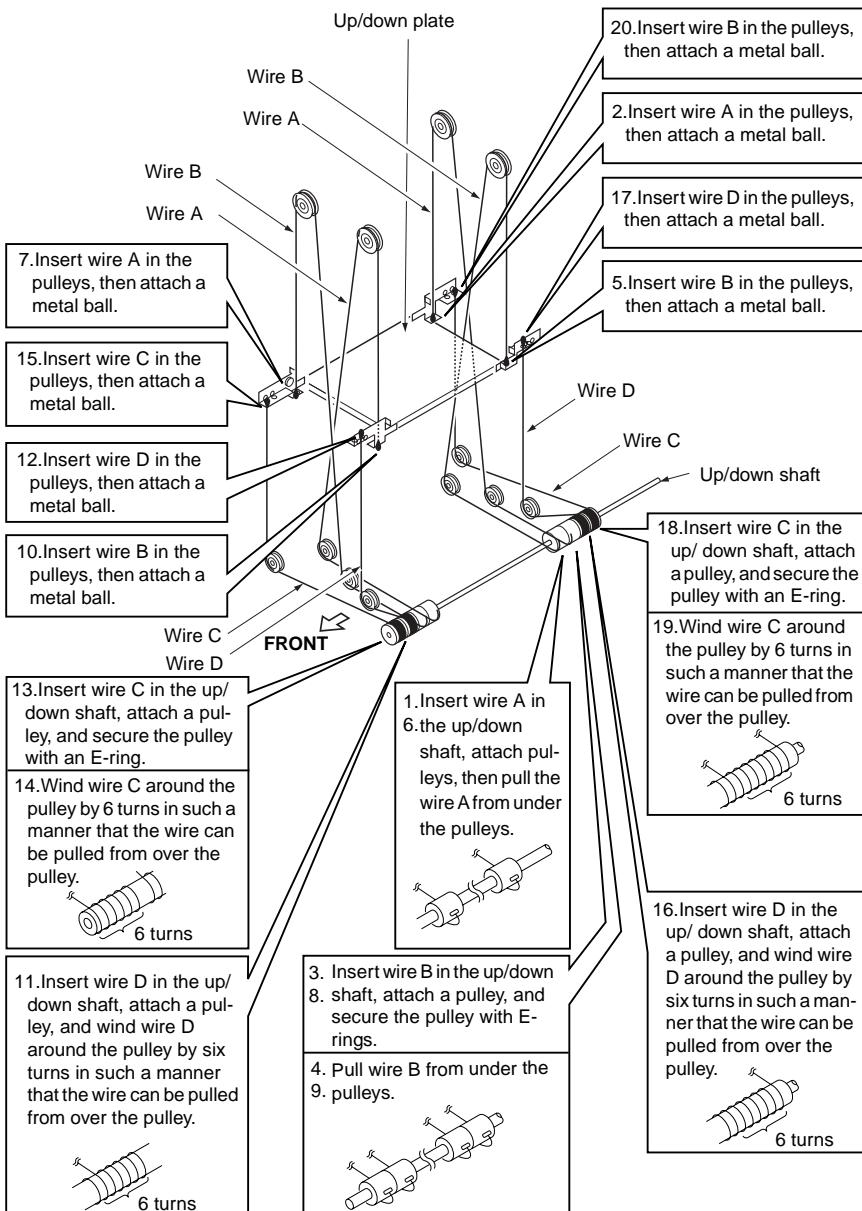
Caution: Two sets of four up/down wires with different length, one set at the front and the other at the back, are used. Wires with the same length can be used either at the front or back if they are used in the same location.



<Removing the Up/Down Wires>



<Installing the Up/Down Wires>



(12) After installing the up/down wires, make sure the up/down wires are passed in the grooves in the pulleys properly and wires do not run on the sides of the pulleys. Also make sure the up/down plate can be moved up and down smoothly by hand.

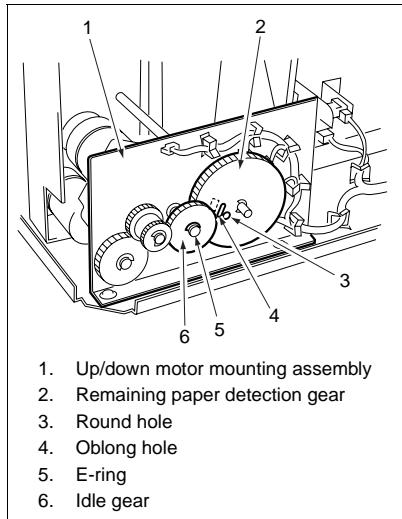
Caution: If the up/down plate does not move up and down smoothly, reinstall the up/down wires.

(13) Install the up/down wire drive motor assembly, up/down gear, and relay connectors, following the removal steps in reverse.

(14) Remove the E-ring to detach the idle gear.

(15) Rotate the remaining paper detection gear until the round hole in this gear is aligned with the oblong hole in the up/down motor mounting assembly.

Caution: Align when the up/down plate is in lowest position.



(16) Install the idle gear.

(17) Attach the covers following the removal steps in reverse.

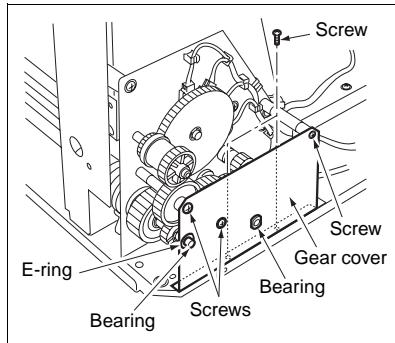
Caution1: After replacing the up/down wires, make horizontal and centering adjustment of the up/down plate. (Refer to "ADJUSTMENT SECTION".)

[8] Replacing the C-404 Up/Down Wires

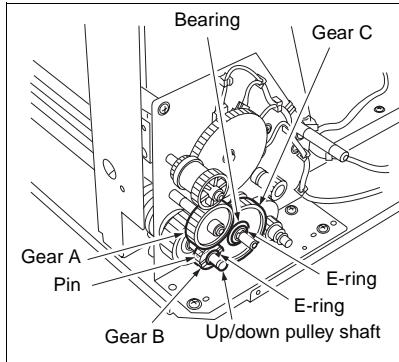
a. Procedure

Caution: With the power held on, press the LT tray down switch (SW100) to move the up/down plate down to the bottom in advance.

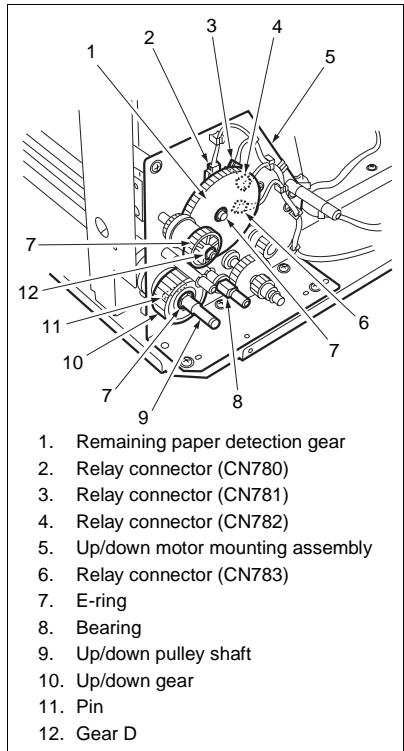
- Remove the clutch replacement cover, side cover (right), front cover, and rear cover following the steps (1) to (5) in [7] Replacing the C-403 Up/Down Wires.
- Remove the E-ring.
- Remove the five screws to detach the gear cover.
- Remove the two bearings.



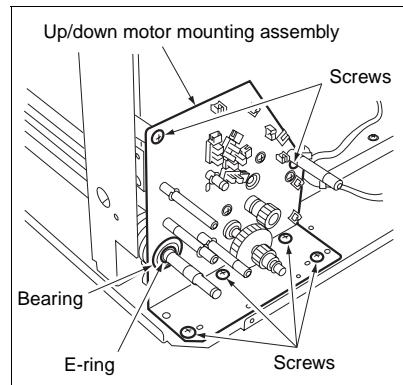
- Remove the gear A.
- Remove the E-ring to remove gear B.
- Remove the detent pin for gear B from the up/down pulley shaft.
- Remove the E-ring and bearing to remove gear C.



- (9) Remove the bearing behind gear C.
- (10) Remove the E-ring to remove the up/down gear.
- (11) Remove the detent pin for up/down gear from the up/down pulley shaft.
- (12) Remove the E-ring to remove gear D.
- (13) Remove the E-ring to remove the remaining paper detection gear.
- (14) Remove four relay connectors (CN780, CN781, CN782, and CN783) to disconnect the wiring harness from the up/down motor mounting assembly.

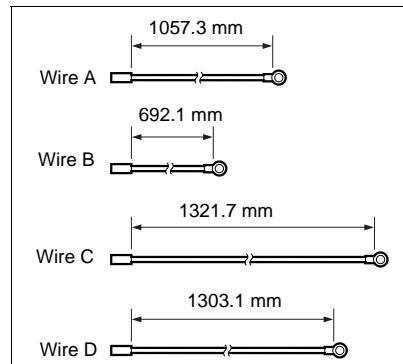


- (15) Remove the E-ring to remove the bearing.
- (16) Remove the six screws to remove the up/down motor mounting assembly.

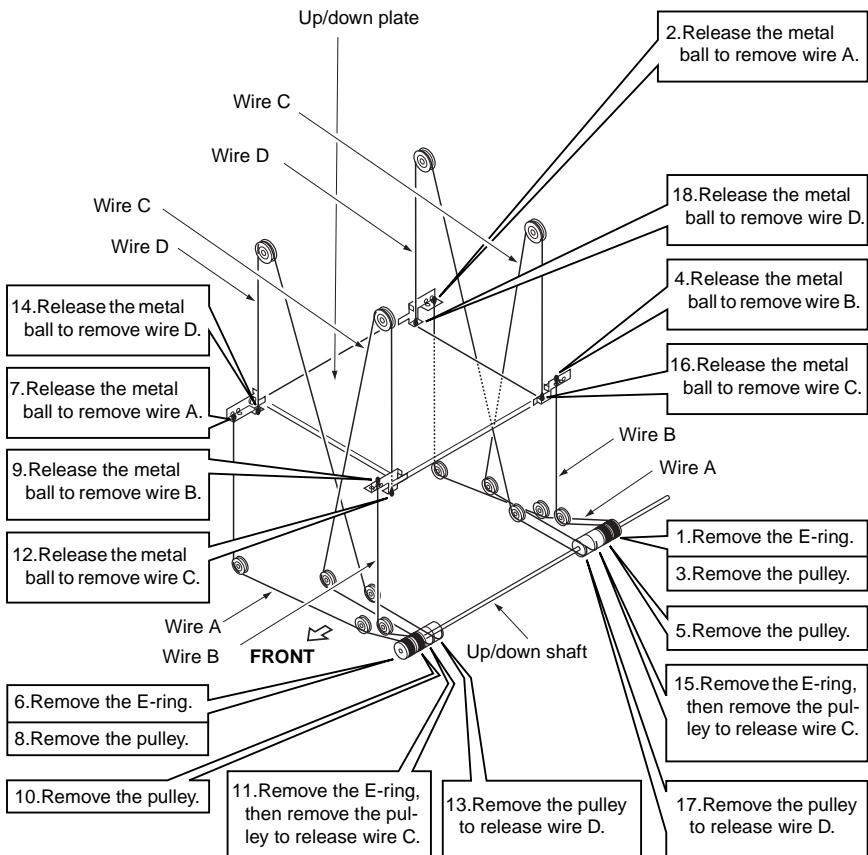


- (17) Replace the up/down wires following the instructions in "Removing the Up/Down Wires" and "Installing Up/Down Wires."

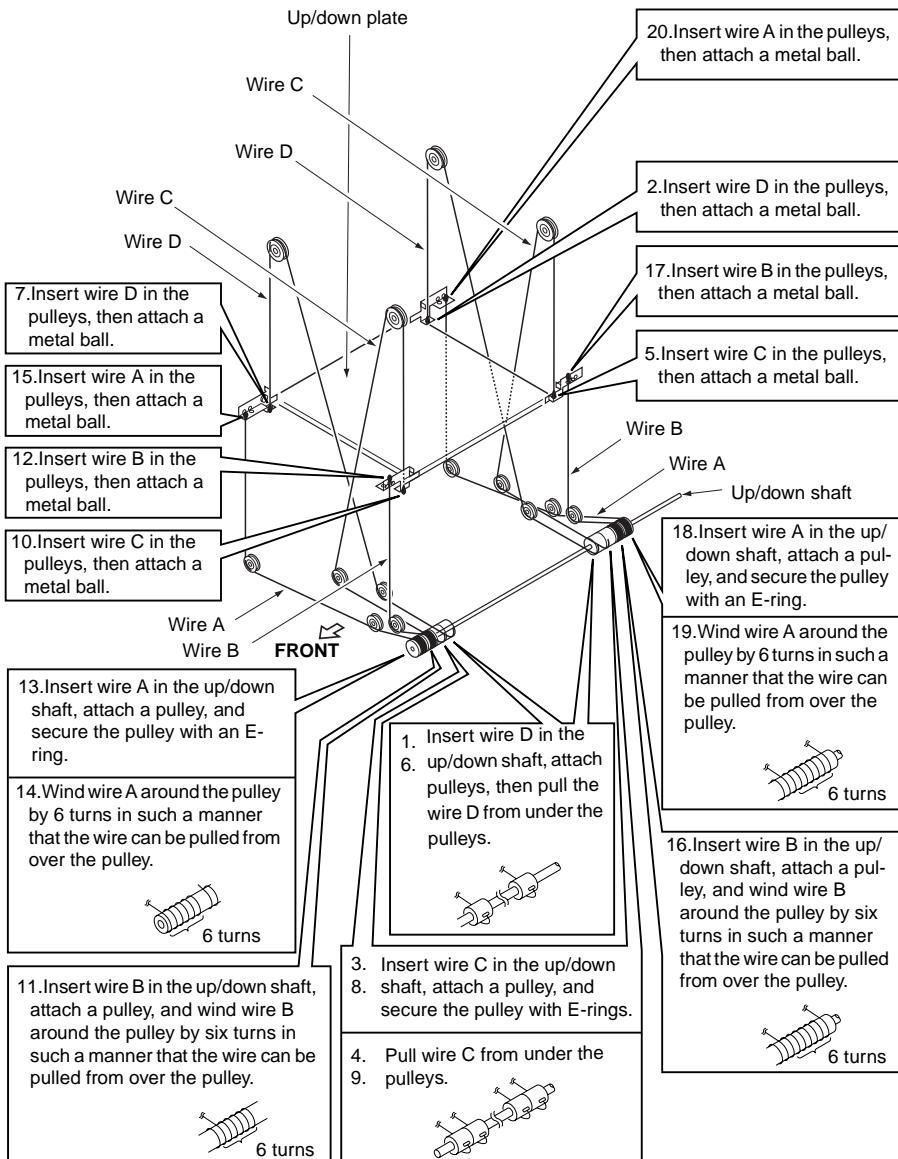
Caution: Two sets of four up/down wires with different length, one set at the front and the other at the back, are used. Wires with the same length can be used either at the front or back if they are used in the same location.



<Removing the Up/Down Wires>



<Installing the Up/Down Wires>

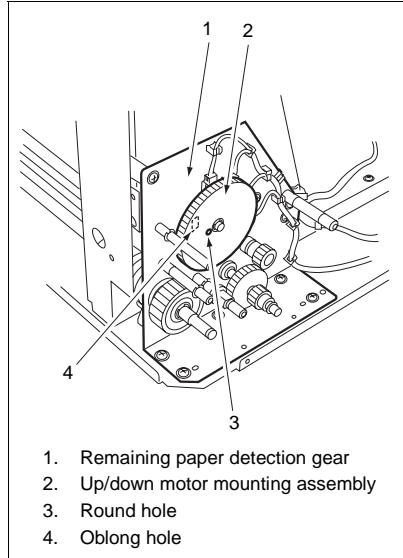


(18) After installing the up/down wires, check whether they are engaged with the pulleys properly and whether they do not ride over the pulleys. Next, move the up/down plate manually to check whether it moves up and down smoothly.

Caution: If the up/down plate does not move smoothly, remove the up/down wires and install them again.

(19) Install the up/down motor mounting assembly, relay connectors, remaining paper detection gear, gear D, and up/down gear following the removal steps in reverse.

(20) Rotate the remaining paper detection gear until the round hole in this gear is aligned with the oblong hole in the up/down motor mounting assembly.



Caution: Align them when the up/down plate is at the bottom.

(21) Install gear C.

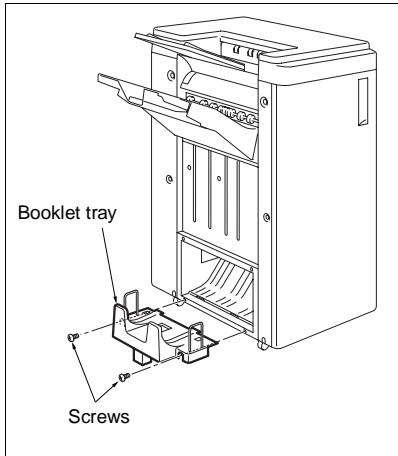
(22) Attach the other gears, gear cover, and external covers following the removal steps in reverse.

Caution: After replacing the up/down wires, make horizontal and centering adjustment of the up/down plate. (Refer to "ADJUSTMENT SECTION.")

EXTERNAL SECTION

[1] Removing and Reinstalling the Booklet Tray (FN-6 only)

- (1) Remove two screws to detach the booklet tray.

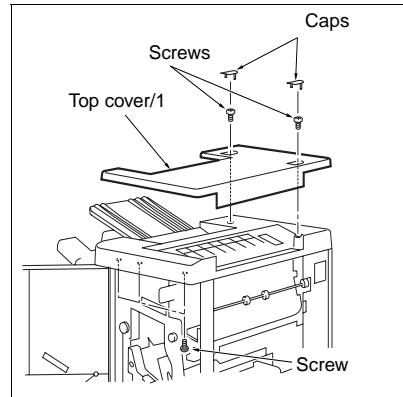


- (2) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Top Cover/1

a. Procedure

- (1) Remove the two caps.
- (2) Open the front door, and remove five screws to detach the top cover/1.



- (3) Reinstall the above parts following the removal steps in reverse.

[3] Removing and Reinstalling the Top Cover/2

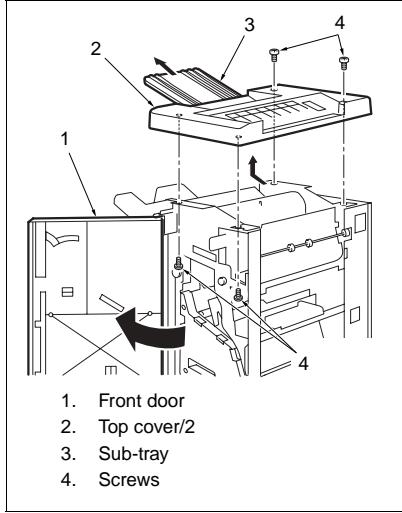
⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

CAUTION: Uninstall the PI (optional) if installed.

a. Procedure

- (1) Remove the top cover/1.
- (2) Open the front door.
- (3) Remove four screws, and pull out the sub-tray. Then remove the top cover/2.



- (4) Reinstall the above parts following the removal steps in reverse.

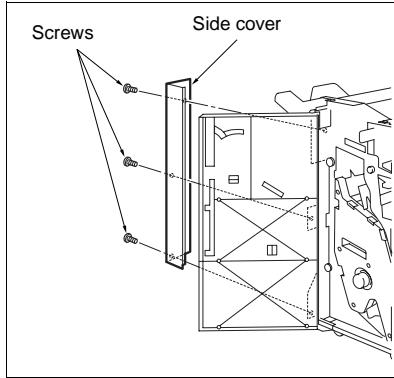
[4] Removing and Reinstalling the Side Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Open the front door.
- (2) Remove three screws, and remove the side cover.



- (3) Reinstall the above parts following the removal steps in reverse.

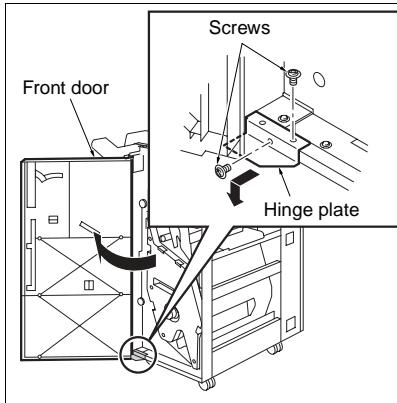
[5] Removing and Reinstalling the Front Door

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Open the front door.
- (2) Remove the two mounting screws holding the hinge plate at the bottom, and remove the front door.



- (3) Reinstall the above parts following the removal steps in reverse.

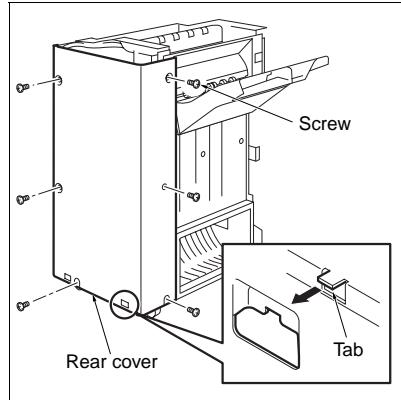
[6] Removing and Reinstalling the Rear Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Remove the six mounting screws, and detach the rear cover.



- (2) Reinstall the above parts following the removal steps in reverse.

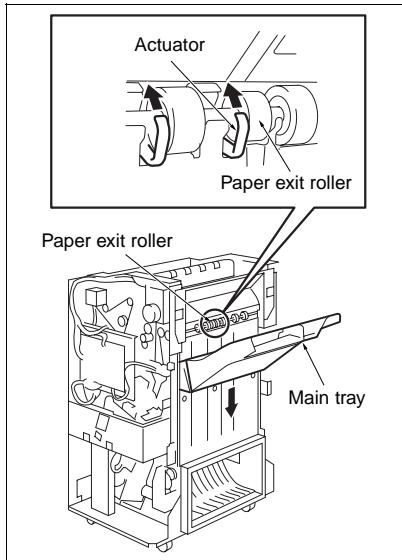
[7] Removing and Reinstalling the Main Tray

⚠ Caution:

After you have lowered the main tray, be sure to unplug the power cord of the main body from the power outlet.

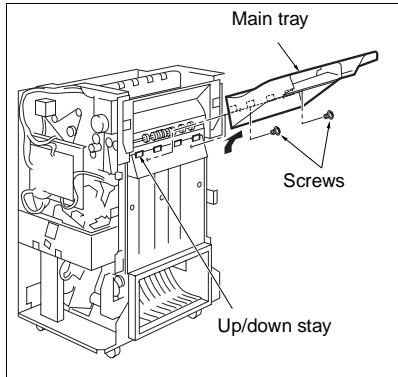
a. Procedure

- (1) Push up the actuator of the main tray exit with your finger to lower the main tray.



- (2) Turn the main body's main power switch (SW1) OFF, and unplug the power cord from the power outlet.

- (3) Remove the two mounting screws.
- (4) Lift the main tray and detach it from the hooks of the up/down stay.



- (5) Reinstall the above parts following the removal steps in reverse.

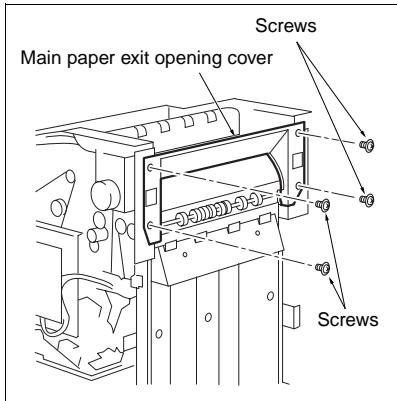
[8] Removing and Reinstalling the Main Paper Exit Opening Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Remove the following parts:
 - Top cover/1 or optional PI (if installed)
 - Top cover/2
 - Side cover
 - Rear cover
 - Main tray
- (2) Remove four screws and detach the main paper exit opening cover.

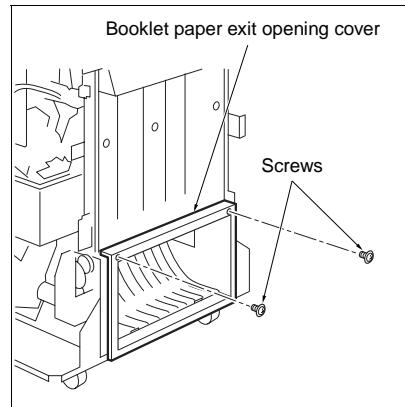


- (3) Reinstall the above parts following the removal steps in reverse.

[9] Removing and Reinstalling the Booklet Paper Exit Opening Cover (FN-6 only)

a. Procedure

- (1) Remove the booklet tray.
- (2) Remove two screws and detach the booklet paper exit opening cover.



- (3) Reinstall the above parts following the removal steps in reverse.

CONVEYANCE SECTION

[1] Replacing the Paper Exit Roller (Sponge Roller)

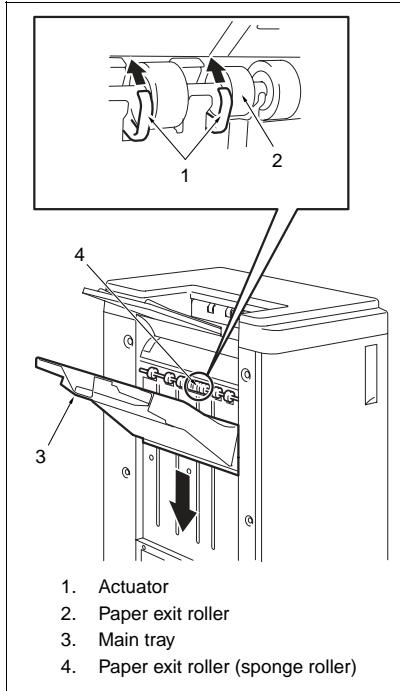
⚠ Caution:

After you have lowered the main tray, be sure to unplug the power cord of the main body from the power outlet.

CAUTION: When replacing the sponge rollers, all of the 5 pairs (10 components) must be replaced.

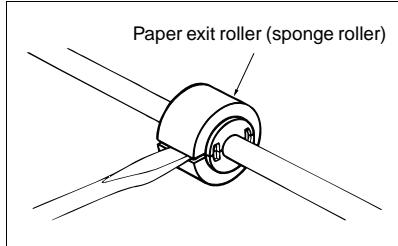
a. Procedure

- (1) Push up the actuator of the main tray exit with your finger to lower the main tray.

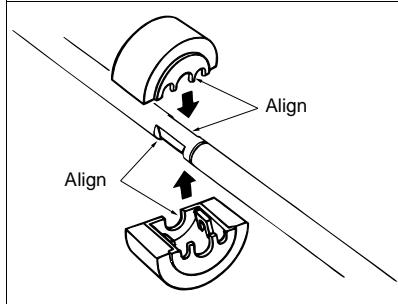


- (2) Turn the main body's main power switch (SW1) OFF, and unplug the power cord from the power outlet.

- (3) Insert the end of the blade screwdriver into the slot in the sponge roller, and twist the screwdriver to pry apart.



- (4) Place the two components of a new sponge roller around the roller shaft so that the tabs of the components are aligned with the dents on the shaft. Press the components together firmly until you hear the "click" sound.



- (5) To reattach the sponge roller shaft, perform the same procedure in reverse order.

[2] Replacing the Intermediate Conveyance Roller (Sponge Roller)

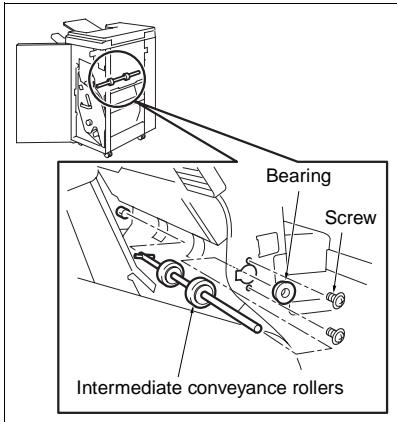
Caution:

Make sure that the power cord of the main tray is unplugged from the power outlet.

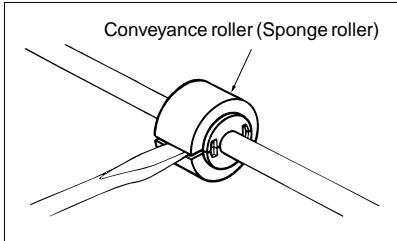
CAUTION: When replacing the sponge rollers, all of the 2 pairs (4 components) must be replaced.

a. Procedure

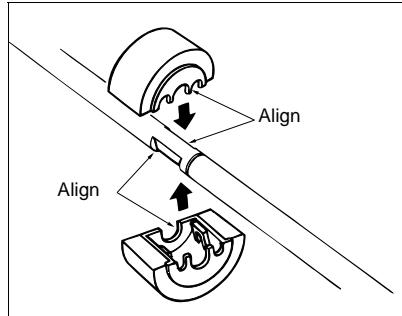
- (1) Open the front door.
- (2) Remove two screws and a bearing, and detach the intermediate conveyance rollers.



- (3) Insert the end of the blade screwdriver into the slot in the sponge roller, and twist the screwdriver to pry apart.



- (4) Place the two components of a new sponge roller around the roller shaft so that the tabs of the components are aligned with the dents on the shaft. Press the components together firmly until you hear the "click" sound.



- (5) To reattach the sponge roller shaft, perform the same procedure in reverse order.

CAUTION: When reinstalling the shaft, make sure that the pin on the far end of the shaft is placed properly in the slot.

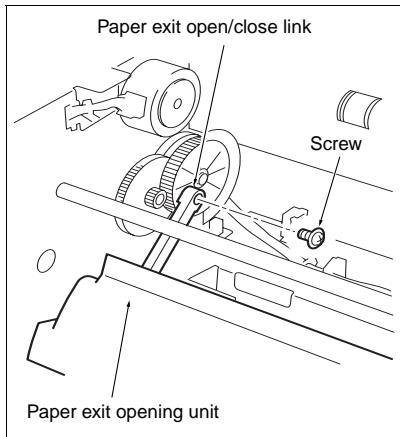
[3] Removing and Reinstalling the Paper Exit Opening Unit

⚠ Caution:

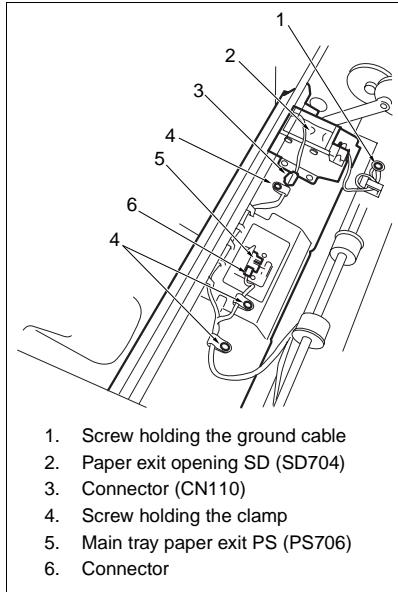
Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

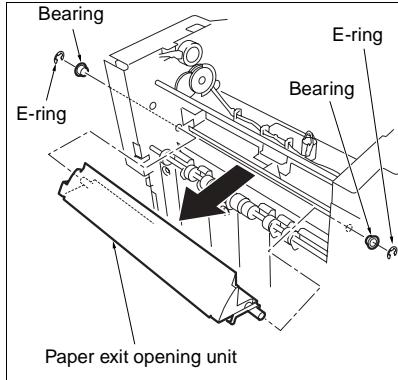
- (1) Remove the following parts:
 - Top cover/1 or optional PI (if installed)
 - Top cover/2
 - Side cover
 - Rear cover
 - Main tray
 - Main paper exit opening cover
- (2) Remove a mounting screw on the paper exit open/close link.



- (3) Remove three screws holding the clamps, one screw holding the ground. Also remove the connector (CN110) for the paper exit opening SD (SD704) and the main tray paper exit PS (PS706).



- (4) Remove the two E-rings and the two shaft holders (at the front and rear side). Remove the paper exit opening unit.



- (5) Reinstall the above parts following the removal steps in reverse.

MAIN TRAY SECTION

[1] Replacing the Tray Up/down Motor (M703)

Caution:

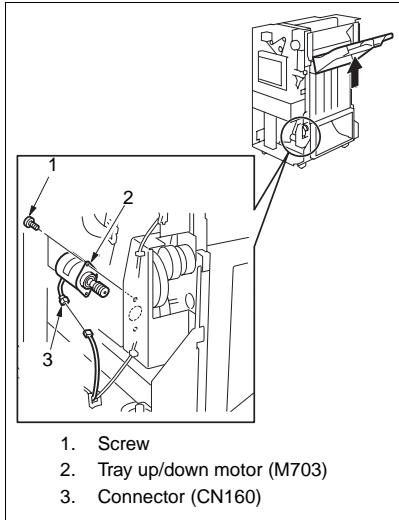
Make sure that the power cord of the main body is unplugged from the power outlet.

Caution:

When removing the tray up/down motor, be sure to hold the main tray to prevent it from falling.

a. Procedure

- (1) Remove the rear cover.
- (2) Remove the connector. Remove two mounting screws while holding the main tray, and then detach the tray up/down motor (M703).



- (3) Reinstall the above parts following the removal steps in reverse.

[2] Replacing the Up/Down Wire

Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

Caution:

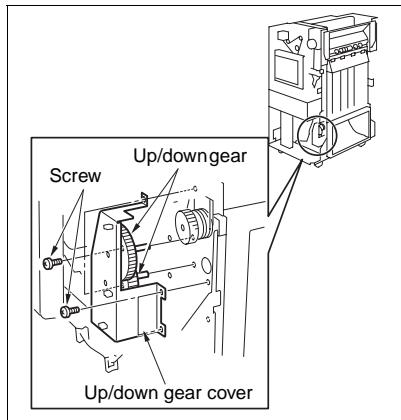
When removing the tray up/down motor, be sure to hold the main tray to prevent it from falling.

CAUTION1: The wire replacing procedure described below is of the rear side. For the front side, the design as well as the winding direction of the wire is symmetrical.

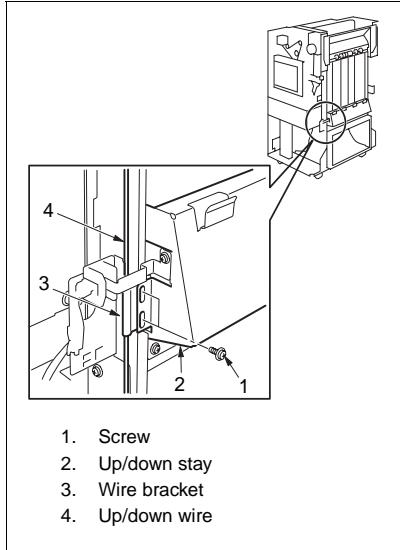
CAUTION2: "F" is impressed on the front side surface of the wire bracket. Also "R" is impressed on the rear side surface. Be sure of the direction when installing.

a. Procedure

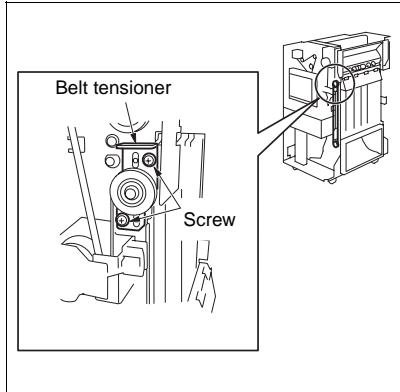
- (1) Remove the following parts:
 - Side cover
 - Front door
 - Rear cover
 - Tray up/down motor (M703)
 - Main tray
- (2) Remove five mounting screws. Remove the up/down gear cover and the gear.



- (3) Remove two screws. Detach the wire bracket on the rear from the up/down stay.

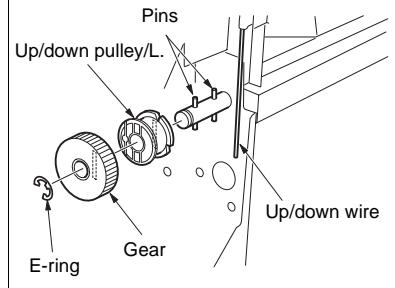


- (4) Loosen the two screws on the belt tensioner.



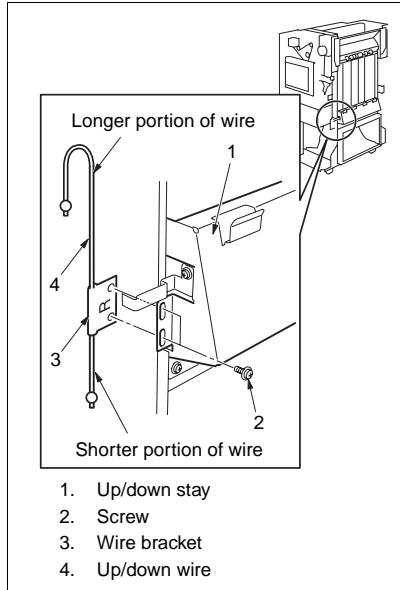
- (5) Remove the E-ring and the up/down pulley/L. Then remove the up/down wire.

CAUTION: When you remove the up/down pulley, the pin falls. Be careful not to lose the pin.

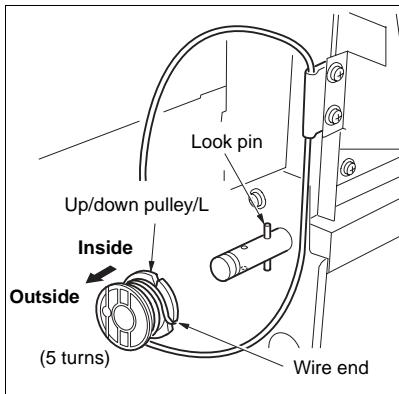


- (6) Temporarily attach the wire bracket to the up/down stay with two screws.

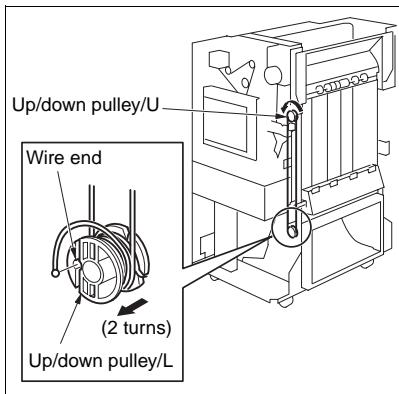
CAUTION: The wire bracket must be installed with the longer portion of the wire facing upward.



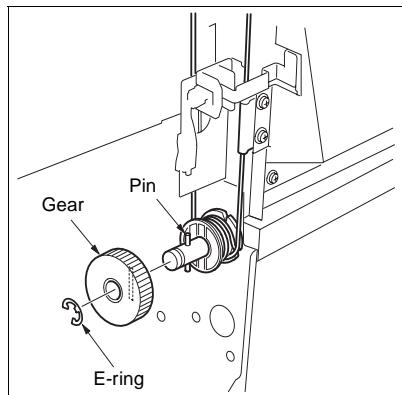
- (7) Secure the end of a new up/down wire to the wire end of the up/down pulley/L. Wind the wire tightly around the up/down pulley/L approx. 5 turns from inside to outside. Insert the pulley/L into the shaft so that the slots on the pulley/L align with the lock pin on the shaft.



- (8) Hook the up/down wire around the up/down pulley/U. Wind the wire tightly around the up/down pulley/L 2 turns from inside to outside. Secure the end of the wire to another wire end (outside) of the up/down pulley/L.

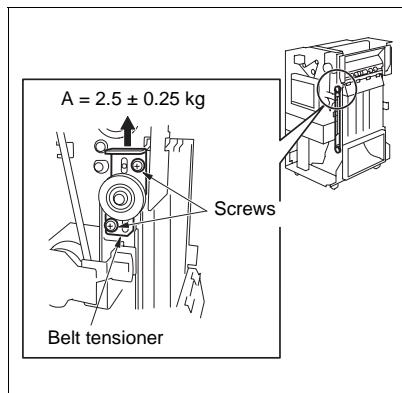


- (9) Insert the pin into the hole in the shaft. Put the gear into the shaft and fix the gear with the E-ring.



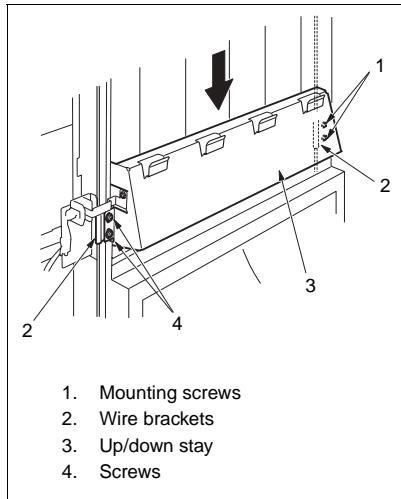
- (10) Use a tension gauge or a spring balance to pull the belt tensioner upward at a specified level of force, A, and tighten the securing screws.

Specified force: $A = 2.5 \pm 0.25 \text{ kg}$



(11) Loosen the two screws securing the front wire bracket. Adjust the height of the front wire bracket to level the up/down stay. Tighten the four mounting screws on the wire brackets (front and rear).

CAUTION: Make sure that the up/down stay is level. If the stay is mounted aslant, an unnecessary load is put on the tray up/down motor (M703) or the gear, which may result in damage to these components.



(12) Reinstall the above parts following the removal steps in reverse.

STACKER SECTION

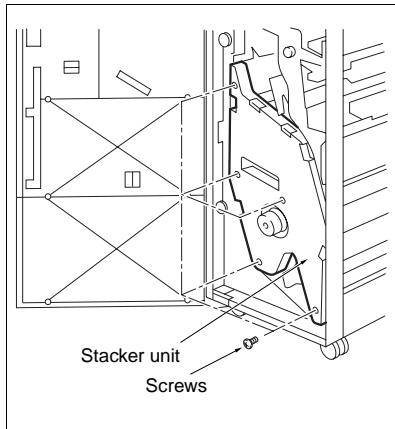
[1] Removing and Reinstalling the Stacker Unit Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Open the front door.
- (2) Remove five screws to detach the stacker unit cover.



- (3) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Stacker Unit

⚠ Caution:

We recommend that at least two people perform this service.

⚠ Caution:

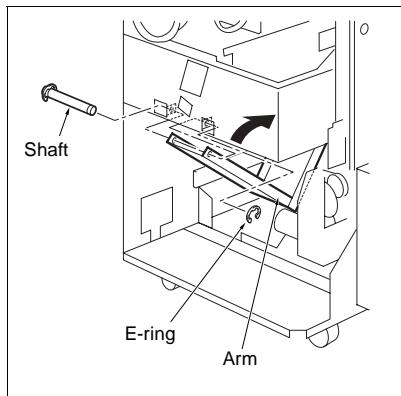
Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

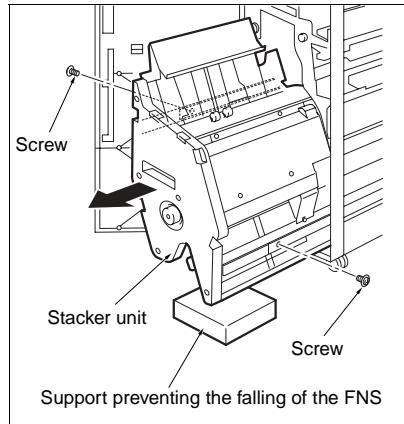
Be careful when detaching the stacker unit. If you remove the stopper, and in succession pull out the stacker unit, the FNS may fall due to the weight of the stacker unit. This may cause injury.

a. Procedure

- (1) Remove the following parts:
 - Booklet tray
 - Side cover
 - Front door
 - Rear cover
- (2) Detach the FNS from the main body.
- (3) Pull the handle and draw the stacker unit.
- (4) Disconnect the three connectors (CN1, CN2, CN3) from the relay board (RB).
FN-112 has two connectors (CN1, CN2).
- (5) Remove each cable from wire guide.
- (6) Remove the E-ring to remove the shaft, then fold up the arm and secure it using tape or other materials.



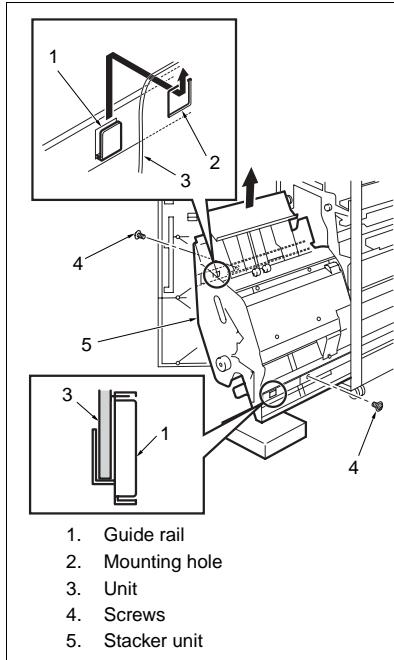
- (7) Remove two screws, and further pull stacker unit out.



- (8) Remove two screws. Lift the stacker unit to detach from the guide rail.

⚠ Caution:

Take care of your posture when servicing to avoid damage to your back or other joints.



- (9) Reinstall the above parts following the removal steps in reverse.

CAUTION: Make sure that the hook in the guide rail is inserted into the mounting hole of the stacker unit, and then tighten the securing screw.

STAPLER SECTION

[1] Removing and Reinstalling the Stapler Unit Cover

Caution:

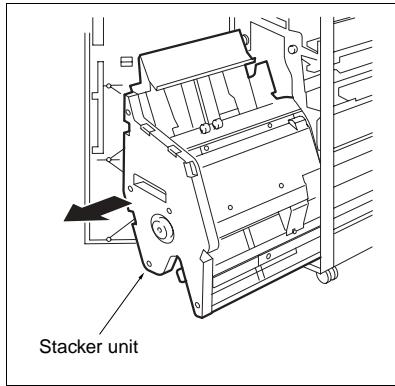
Make sure that the power cord of the main body is unplugged from the power outlet.

Caution:

Be careful when you detach the FNS from the main body. If you pull out the stacker unit, the FNS may fall. This may cause injury.

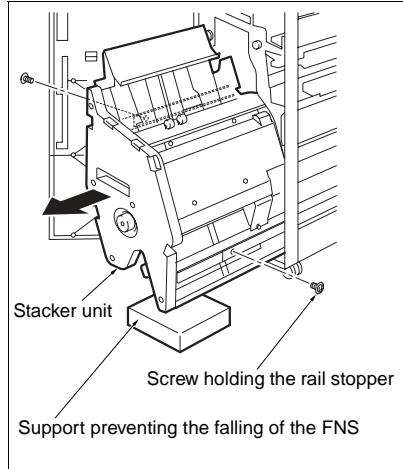
a. Procedure

- (1) Open the front door.
- (2) Draw the stacker unit out.

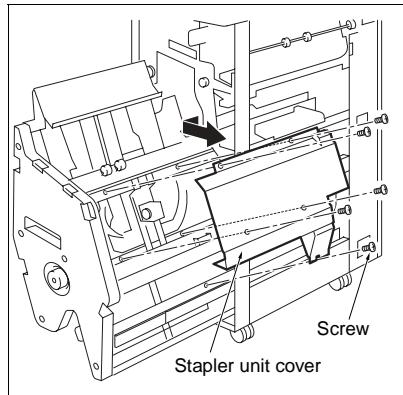


- (3) Remove the two screws securing the rail stopper. Further pull the stacker unit out.

CAUTION: Place something under the drawn stacker unit to prevent the FNS from falling due to the weight of the unit.



- (4) Remove five screws and detach the cover.



- (5) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Clincher

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

Do not use hands to move stapler units to horizontal direction.

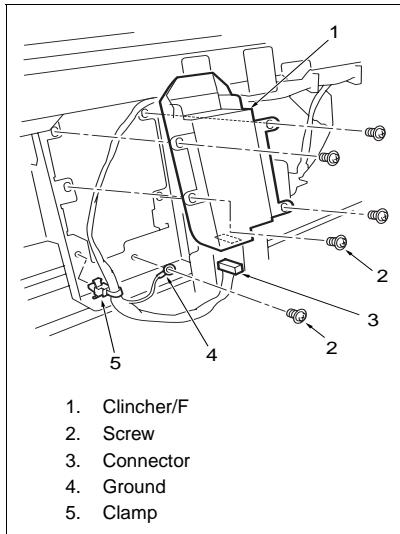
(Otherwise the belt and the gear teeth skipping may occur.)

⚠ Caution:

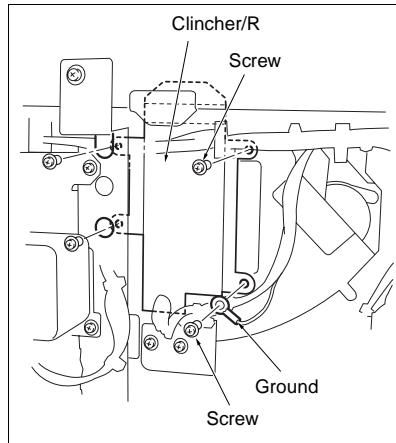
Be sure to perform the adjustment work described in the "FNS Stapler Upper/Lower Positions Adjustment" of the manual, "Adjustment," after you have attached the clincher.

a. Procedure

- (1) Open the front door.
- (2) Pull the stacker unit out and remove the stapler unit cover.
- (3) Remove a mounting screw holding the ground cable. Remove the ground cable and the clamp.
- (4) Remove four screws securing the clincher. Detach the clincher/F and the connector.

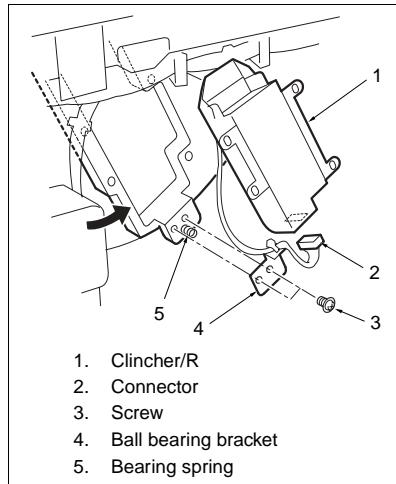


- (5) Remove four mounting screws holding the clincher/R.



- (6) Remove two screws. Detach the ball bearing bracket, and then remove the clincher/R by rotating it to the appropriate position. Remove the connector.

CAUTION: Do not lose the bearing spring and the ball.



- (7) Reinstall the above parts following the removal steps in reverse.

[3] Removing and Reinstalling the Stapler

Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

Caution:

Do not use hands to move stapler units to horizontal direction.

(Otherwise the belt and the gear teeth skipping may occur.)

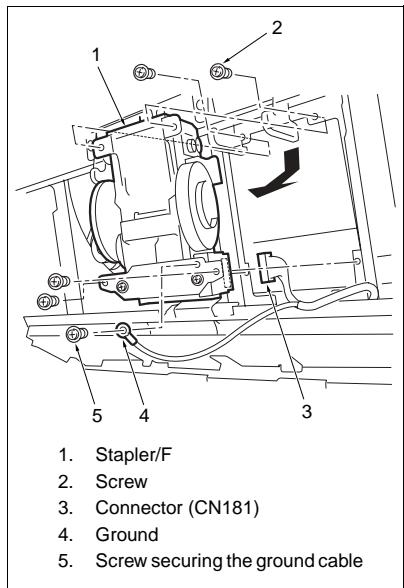
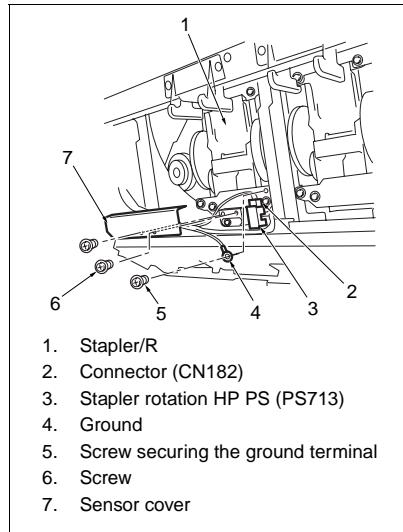
Caution:

Be sure to perform the adjustment work described in the "FNS Stapler Upper/Lower Positions Adjustment" of the manual, "Adjustment," after you have attached the stapler.

a. Procedure

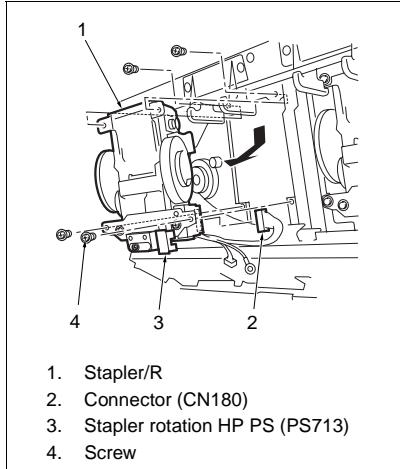
- (1) Open the front door.
- (2) Draw the stacker unit out.
- (3) Remove the cartridge from the stapler.
- (4) Remove four mounting screws securing the stapler and the screw holding the ground cable. Detach the stapler/F and the connector (CN181).

- (5) Remove two screws holding the sensor cover of the stapler/R. Remove the screw securing the ground cable. Detach the connector (CN182) of the stapler rotation HP PS (PS713).



- (6) Remove four screws. Detach the stapler/R and the connector (CN180).

CAUTION: Take care not to damage the stapler rotation HP PS (PS713) when removing the stapler/R.



- (7) Reinstall the above parts following the removal steps in reverse.

CAUTION: When installing the sensor cover of the stapler/R, take care that the bundled cable does not disturb the stapler rotation HPPS (PS713) and is not nip by the gears.

EXTERNAL SECTION

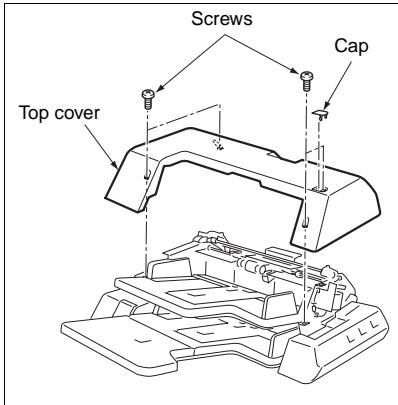
[1] Removing / Re-installing the External covers

Caution:

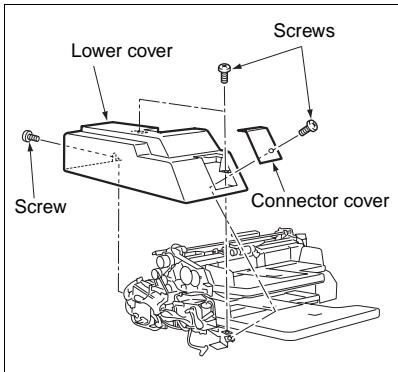
Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

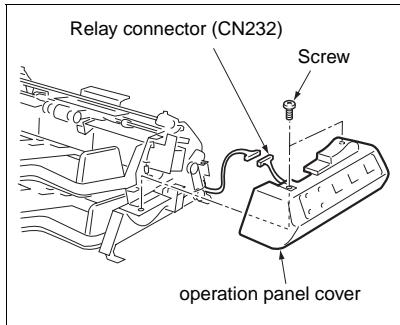
- (1) Remove cap on the top cover.
- (2) Remove four screws to detach the top cover.



- (3) Remove one screw to detach the connector cover.
- (4) Remove three screws to detach the lower cover.



- (5) Remove two screws, disconnect the relay connector (CN232), and detach the operation panel cover.



- (6) Reinstall the above parts following the removal steps in reverse.

PAPER FEED UNIT

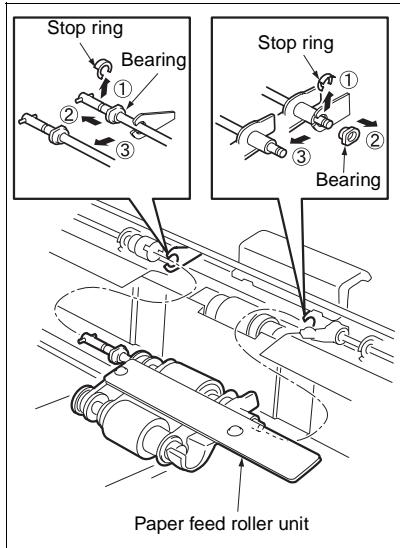
[1] Replacing the Paper Feed Roller and Feed Roller

⚠ Caution:

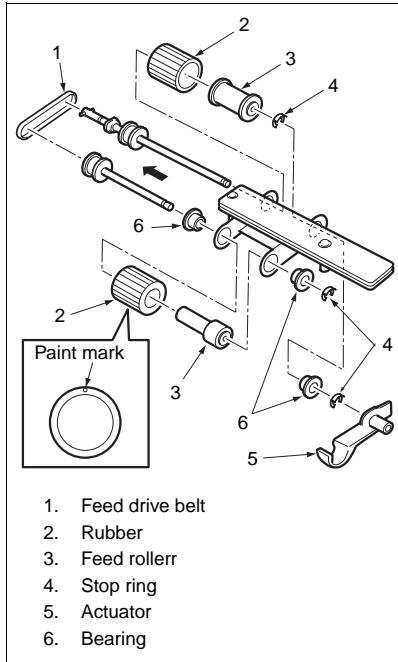
Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

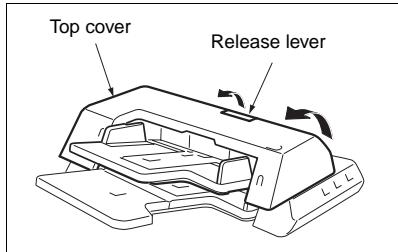
- (1) When replacing the paper feed roller and feed roller for the upper tray, detach the top cover.
- (2) Remove the two stop rings, then shift the left and right bearings outside, and remove the feed roller unit.



- (3) Remove actuator, three stop rings, three bearings of the feed roller unit, then slide the roller shaft in the direction of the arrow to remove each roller.



- (4) When replacing the paper feed roller and feed roller for the lower tray, open the upper tray and perform the steps 2 and 3.



- (5) Reinstall the above parts following the removal steps in reverse.

Caution: Ensure that the mounting direction of each roller and rubber is correct.

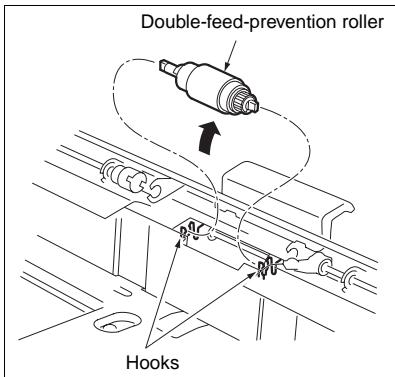
[2] Replacing the Double Feed Prevent Roller and Torque Limiter

Caution:

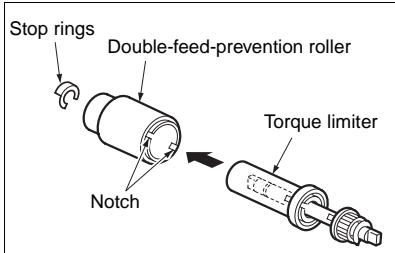
Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) When replacing the double feed prevent roller and the torque limiter for the upper tray, detach the top cover.
- (2) Detach the paper feed roller unit.
- (3) Release the hooks on both sides, remove the double feed prevention roller assembly by lifting up, then pull out the shaft, and remove the double feed prevention roller together with the feed-reverse gear.



- (4) Separate the double feed prevention roller and the torque limiter from the double feed prevention roller assembly.



- (5) When replacing the double feed prevention roller and the torque limiter for the lower tray, open the upper unit and perform the steps 2 and 3.

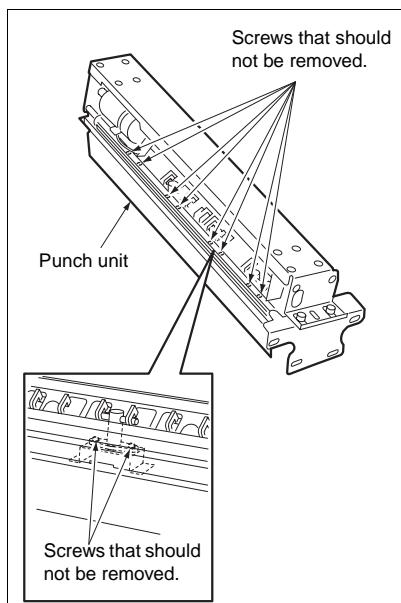
- (6) Reinstall the above parts following the removal steps in reverse.

Caution: Ensure that the mounting direction of each roller and rubber is correct.

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PUNCH SECTION

Caution: The following screws should not be removed. If you do, punching cannot be done as designed.

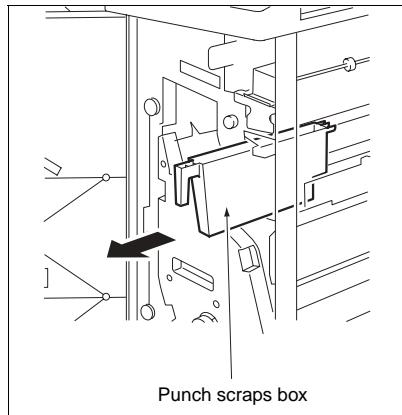


[1] Replacing the Punch unit

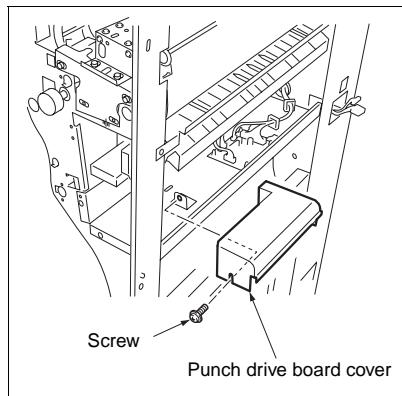
⚠ Caution: Be sure to unplug the power cords of the main body and this machine from the wall outlet.

a. Procedure

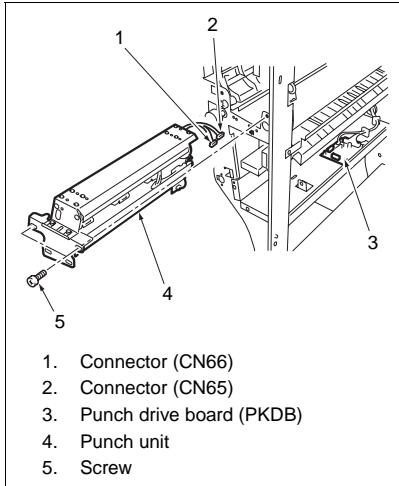
- (1) Remove the punch scraps box.



- (2) Remove the drive board cover by removing one screw.



- (3) Disconnect two connectors (CN65, CN66) connecting the punch unit from the PK drive board.



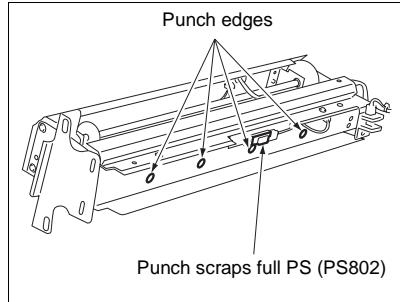
- (4) Remove the punch unit from FNS by removing two screws.
(5) Reinstall the above parts following the removal steps in reverse.

[2] Cleaning the Punch Edges and Punch Scraps Full PS (PS802)

Caution: Be sure to unplug the power cords of the main body and this machine from the wall outlet.

a. Procedure

- (1) Remove the punch unit.
- (2) Use a blower brush to remove paper dust and punch scraps from the punch edges and punch scraps full PS (PS802).

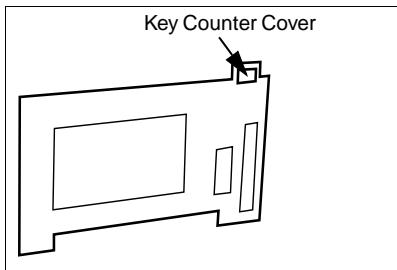


- (3) Reinstall the above parts following the removal steps in reverse.

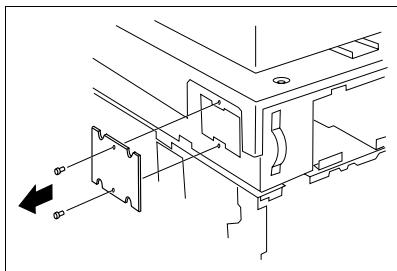
OTHER

[1] Installation of the Key Counter Socket (OPTION)

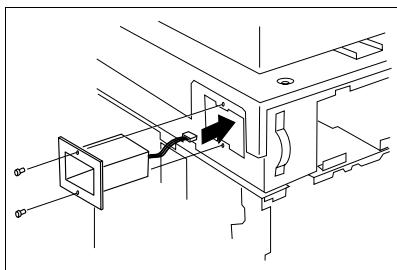
1. Remove the Rear Cover and Right Side Cover.
2. Remove the Key Counter Cover from the Right Side Cover.



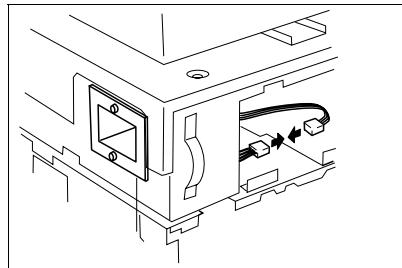
3. Remove two screws and the Cover.



4. Use two screws, secure the Key Counter Socket.



5. Remove dummy connector. Connect the Key Counter Socket connector.



Note: When the Key Counter Socket is mounted, Set to the Software DIP Switches.

*25mode: DipSW No.4 Bit.4. (☞ 2-9)
Key counter removal recovery.

*25mode: DipSW No.9 Bit.4 - 0 (☞ 2-10)
Operation at the counter removal.

1 DIS./ASSEMBLY



ADJUSTMENT

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HOW TO USE THIS SECTION

[1] Scope and Precautions

This section provides detailed information about adjustment items and procedures. Before addressing customer complaints, perform the following checks.

1. Check whether the power supply voltage meets the specifications.
2. Check whether the power supply is properly grounded.
3. Check whether this machine shares the power supply with any other machine that draws large current intermittently (e.g., elevator and air conditioner that produce electrical noise).
4. Check whether the installation environment is good.
 - a. High temperature / High humidity, direct sunlight, ventilation, etc.
 - b. Level of installed location
5. Check whether original has a problem that may cause defective images.
6. Check whether the selected density value is correct.
7. Check whether the platen glass, slit glass, etc. is soiled.
8. Check whether correct paper is used for copying.
9. Check whether copying materials and parts (e.g., developer, drum, and cleaning blade) are replenished and replaced when they reach the end of their useful life.
10. Check whether toner remains.

When servicing the machine, observe the following precautions:

1. Only either side of the AC line is shut off when the main power of this machine is turned off. Always unplug the power cord before starting service work. If it is necessary to service the machine with the power on, take care not to be caught in the scanning gear of the exposure unit.
2. Special care should be taken when handling the fixing unit because it operates at extremely high temperatures.
3. The developing unit has a strong magnetic field. Keep watches and measuring equipment away from it.
4. Take care not to damage the drum with tools and so on.
5. Do not touch IC pins with bare hands.

ADJUSTMENTS MADE WHEN REPLACING PARTS

Adjustments (including checks) and settings are not only required when a customer complaint about the copy image quality is received, but also after replacing or reassembling parts.

[1] How to Read Tables

Components of the tables used in this section are as follows:

1. Mode

Adjustment mode to be selected.

[P]: P mode

[25]: 25 mode

[36]: 36 mode

[47]: 47 mode

2. Code

Code and copy quantity setting button used in each mode.

3. Page

Page in the "ADJUSTMENT" section.

4. Circled numbers

① ② Indicate that adjustments (including checks) must be made in order of precedence.

○ (Circle without numeric character):

Indicates that adjustments (including checks) can be made independently.

ADJUSTMENT

LIST OF ADJUSTMENT ITEMS

Item No.	Classification by Adjustment		Adjustment Item	Mode	Page	Drum	Developer	Write unit	Dust-proof glass	Each tray unit	By-pass paper feed unit	Tray up/down wire	Registration toller	Registration unit	Registration clutch	Mis-centering detection sensor	ADU unit	CCD unit	Fixing unit	Memory board	RADF unit	LCT	FNS	Stapler unit	Pl	PK (PK-2)	PK (PK-5)	PZ PK-2
1	Process Adjustment	High voltage adjustment Drum Peculiarity Adjustment	Charging grid manual adjustment	2-50		①																						
2			Blade setting mode	2-51	③																							
3			Auto maximum density adjustment	2-52	④ ② ① ①																							
4			Auto dot diameter adjustment	2-52	⑤ ③ ② ②																							
5			LD1 offset adjustment	2-53	⑥ ④ ③																							
6			LD2 offset adjustment	2-54	⑦ ⑤ ④																							
7			Auto gamma adjustment (1dot)	2-55	⑧ ⑥ ⑤ ③																							
8			Auto gamma adjustment (2dot)	2-56	⑨ ⑦ ⑥ ④																							
9			Cartridge set mode	2-56	② ①																							
10	Image Adjustment	Tray Adjustment		2-58		O O																						
11		Magnification Adjustment	Printer vertical magnification adjustment	2-59				O O																				
12			Printer horizontal magnification adjustment	2-60	O																							
13			Scanner (platen) drum clock magnification adjustment	2-60																								
14			Scanner (RADF) drum clock magnification adjustment	2-61																								
15			Timing Adjustment	2-62	O			O O O																				
16		RADF Adjustment	Printer restart timing adjustment	2-62																								
17			Printer registration loop adjustment	2-63																								
18			Printer pre-registration adjustment	2-63																								
19			Printer leading edge timing adjustment	2-64																								
20			Scanner (platen) restart timing adjustment	2-64				(O)	O O																			
21			RADF restart timing adjustment	2-65																								
22			RADF registration loop amount adjustment	2-66																								
23	Centering Adjustment	RADF Adjustment	RADF density adjustment	2-66																								
24			RADF original size adjustment	2-67																								
25			RADF incline offset adjustment	2-68	O					O																		
26		Centering Adjustment	Printer centering adjustment	2-68							O																	
27			Scanner (platen) centering adjustment	2-69							O	O O																
28	Distortion Adjustment (Copier)	RADF Centering Adjustment	RADF centering adjustment	2-70							O	O																
29			Scanner (platen) distortion (main scan)	2-70							O	O																
30			Scanner (platen) distortion (sub-scan)	2-70							O	O																
31			Scanner (RADF) distortion (main scan)	2-70							O	O																
32			Scanner (RADF) distortion (sub-scan)	2-80							O	O																
33	Finisher Adjustment	Stitch and fold stopper adjustment		2-80							O	O																
34		Folding stopper adjustment		2-81							O	O																
	Cover sheet tray size adjustment			36																								

Item No.	Classification by Adjustment		Adjustment item	Mode	Page	Drum	Developer	Write unit	Dust-proof glass	Each tray unit	By-pass paper feed unit	Tray up/down wire	Registration roller	Registration unit	Registration clutch	Mis-centering detection sensor	ADU unit	CCD unit	Fixing unit	Memory board	RADF unit	LCT	FNS	Stapler unit	PI	PK (PK-2)	PK (PK-5)	PZ PK-2
35	Finisher Adjustment	Punch Adjustment	Punch vertical position adjustment	36	2-82																							
36			Punch horizontal position adjustment		2-82																							
37			Punch registration loop adjustment		2-83																							
38	Tray Centering Adjustment				2-101		O																					
39	Adjusting the LCT Paper Feed Roller Pressure				2-104																							
40	Paper up/down Plate Horizontal Adjustment				2-105																							
41	Skew Adjustment				2-107																							
42	Tray Spring pressure adjustment				2-108		O																					
43	RADF Mounting Position Adjustment				2-112																							
44	RADF Skew Adjustment				2-113																							
45	RADF Paper Skew Adjustment		Face side of original paper skew		2-114																							
46			Back side of original paper skew		2-115																							
47	PI Centering adjustment				2-137																					(3)		
48	PK Adjusting the tilt of the punch hole position				2-133																					(1)		
49	PK Adjusting the punch hole vertical position				2-135																						(2)	
50	Drum Count Reset			25	2-40	O																						
51	Developer Count Reset				2-40	O																						
52	Web Counter Reset				2-40																							

Caution: Replacing the image control board

- When a damaged image control board is replaced, the memory board on this board must be used on the new image control board.
Only when the memory board is damaged, use a new memory board on a new control board.
Since the new memory board does not have adjustment data, the all adjustments are required. Before making the all adjustments, make the "47mode-92(output)" setting to make the new memory board effective.
- After making any adjustment, make the "47mode -96 (output) setting". After made the "47mode-96 (output)" setting, the adjustment data is saved.
- However, the "47mode-92" and -96" settings are protected to prevent them from careless operation. In order to make "47mode -92" and -96" settings using the saved adjustment data, the protection must be disabled. For the unprotection method, contact the service section at the authorized distributor.

LCD ADJUSTMENT

[1] LCD Control Panel Adjustment

Enter the key operator mode and select " 10 Touch panel adjustment" to adjust the LCD touch panel.

*If you cannot select the touch panel adjustment mode pressing any numeric key after entering key operator mode will take you directly to " 10 Touch panel adjustment".

[2] LCD Panel Contrast/Key Sound Adjustment

Enter the key operation mode and select " 7 LCD Panel contrast/Key sound adjustment" to adjust the contrast, backlight, and/or buzzer as desired.

SETTINGS AND ADJUSTMENTS MADE WITH THE P FUNCTION

The P function allows you to perform following numerical value checks using the Utility button:

1. Total counter
2. Copier counter
3. Printer counter
4. * PM counter
5. Density Shift (Auto <Text/Photo>)
6. Density Shift (Increase Contrast)
7. Density Shift (Photo)
8. Density Shift (Text)

* PM counter is only displayed when Mode Check button is pressed on the operation panel.

[1] Checking and Printing the P Function

1. Turn ON the SW2 (sub power).
2. Press the Utility button.
3. Counter list is displayed.
4. Press the [COUNTER MENU] key.
5. Press the START button to print out the counter list. The P function is cancelled automatically.
6. If the counter list need not be displayed, press the [EXIT] key.

[2] Setting up the P Function

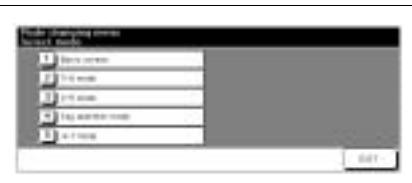
1. Turn ON the SW2 (sub power).
2. Press the [SPECIAL ORIGINAL] key.
3. Select the required image quality, text, photo etc. Then press the Utility button to set the desired density shift.
4. Enter a value (0-5) with a numeric key, then press the [OK] key. The smaller the value, the darker the density.
5. Press the [OK] key to return to the Basic screen.

MODE CHANGING MENU

[1] Mode Selection

You can select a mode from the following [Mode changing menu]: [Select mode] without turning OFF and ON the power switch.

- ① Basic screen
- ② 3-6 mode
- ③ 2-5 mode
- ④ Key operation mode
- ⑤ 4-7 mode

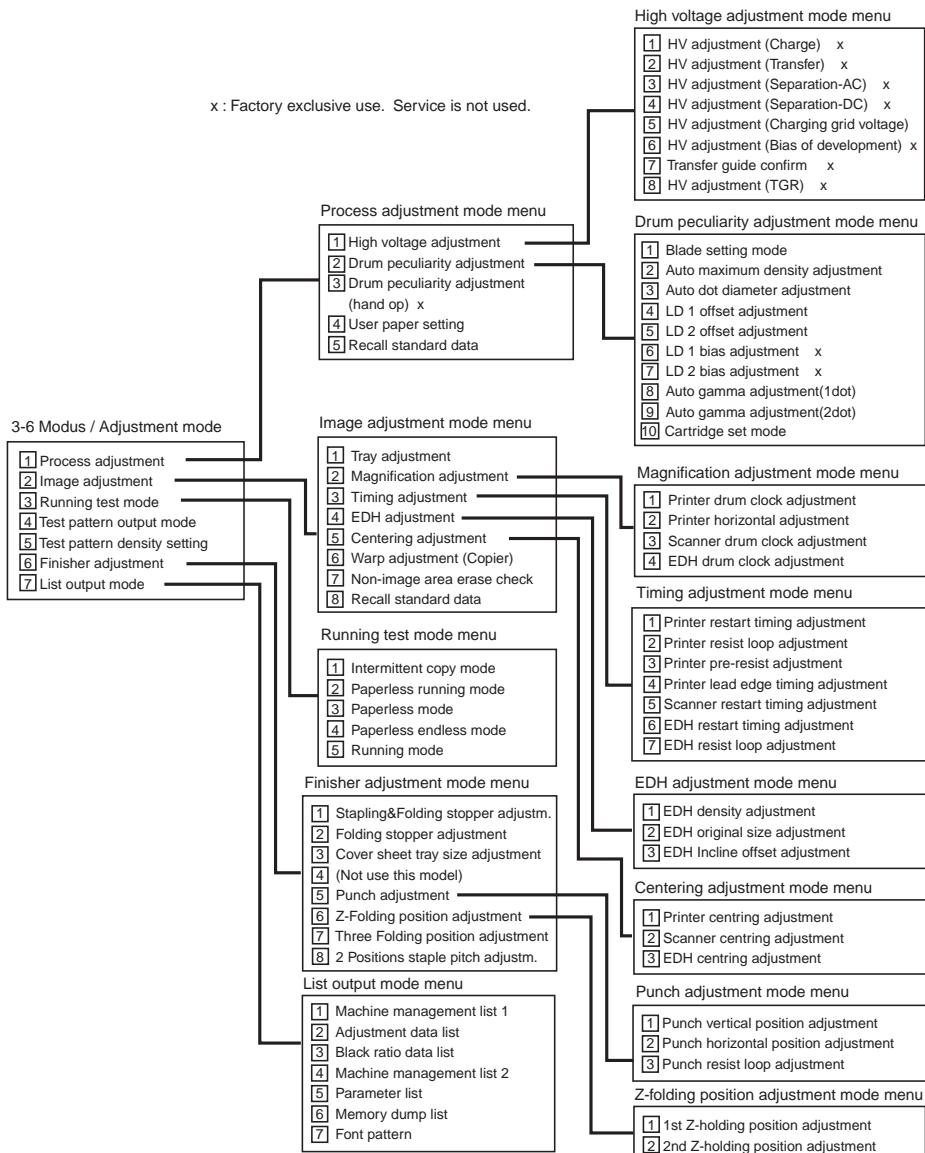


Step	Operation
1	Turn on the SW2 (sub power).
2	Press Utility button and wait until [Enter password for mode selection] message appears.
3	Enter the password 9272 and press the Start button.(Note that this password is fixed and cannot be changed.)The [Mode changing menu] appears.
4	Enter the number to select the desired mode.
5	To return to the [Mode changing menu], press Utility button and wait until the menu appears again.
6	Upon completion of the adjustment, press [EXIT] key to return to the Basic screen.

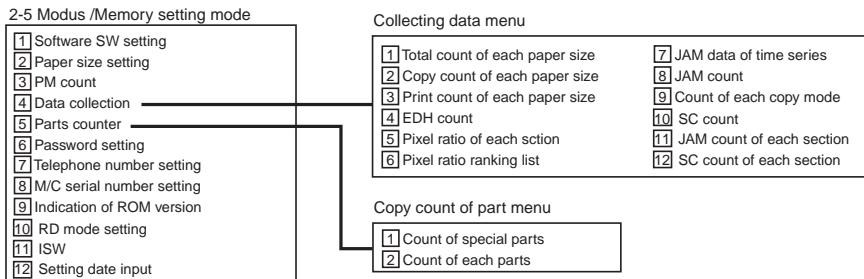
ADJUSTMENT

[2] Display transition of 36 modes

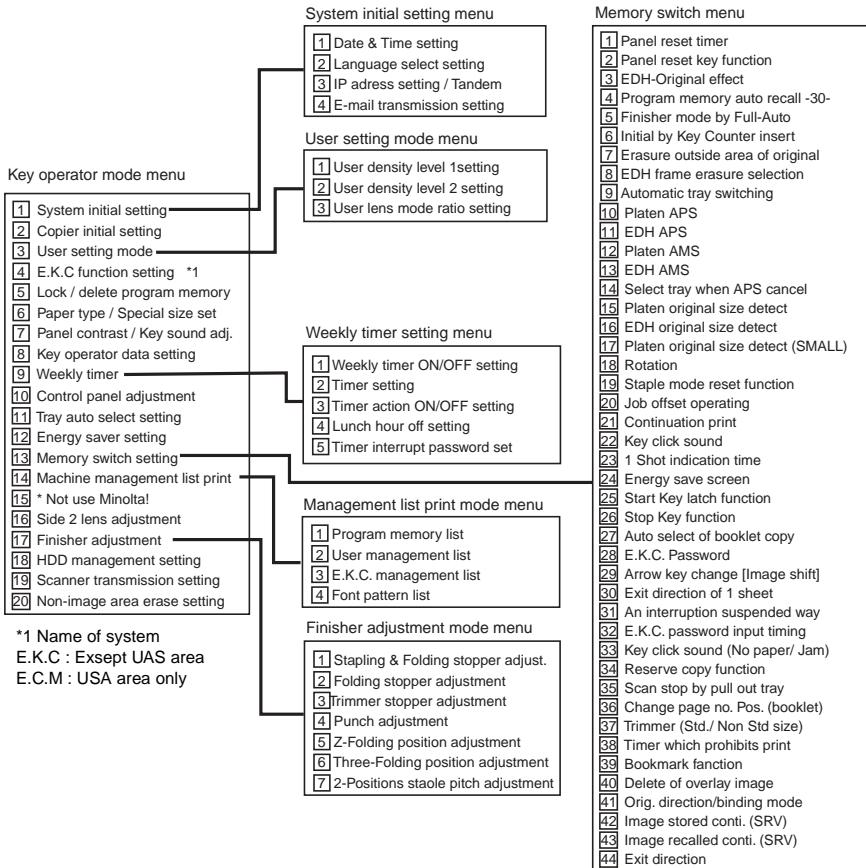
x : Factory exclusive use. Service is not used.



[3] Display transition of 25 modes



[4] Display transition of Key Operation modes



*1 Name of system

E.K.C : Exept UAS area

E.C.M : USA area only

25 MODE

[1] Setting the 25 Mode

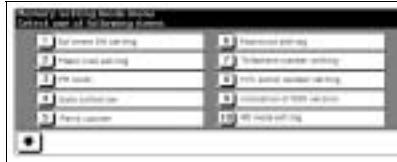
This machine has an adjustment mode called the "25 Mode". Select this mode to rewrite data in the non-volatile memory or make various settings.

1. Turn OFF the SW2 (sub power).
2. While pressing the copy quantity setting button 2 and 5, turn ON the SW2 (sub power).

The Memory setting mode menu Screen will appear.

Now the machine is in the 25 mode, disabling normal copy operations.

[Memory setting mode menu Screen]



3. Press the numeric button of the desired setting item.
The associated setting screen will appear.
4. Enter data in the setting screen.
5. Turning OFF the SW2 (sub power) cancels the 25 mode.
6. New data will take effect after restart.

[2] List of Adjustment Items for 25 Mode

Adjustment Item Menu		Remarks	
①	Software DIP SW setting	See "list of Software DIP Switches".	
②	Paper size setting		
③	PM count	Resetting PM Count Setting PM cycle	
④	Data collection	① Total count of each paper size	
		② Copy count of each paper size	
		③ Print count of each paper size	
		④ RADF count	
		⑤ Pixel ratio of each section	
		⑥ Pixel ratio ranking list	
		⑦ JAM data of time series	
		⑧ JAM count	
		⑨ Count of each copy mode	
		⑩ SC count	
		⑪ JAM count of each section	
		⑫ SC count of each section	
⑤	Parts counter	① Count of special parts	COUNT RESET
		② Count of each part	COUNT RESET Part name setting P/N setting Limit Setting
⑥		Key Operator password	4 digits
		EKC master key code	8 digits
		Weekly timer password	4 digits
		HDD management password	4 digits
⑦	Telephone/Fax number setting	Customer support telephone number	16 digits
		Customer support FAX number	16 digits
⑧	M/C serial number setting	Main body	
		Optional tray	
		Finisher	
⑨	Indication of ROM version		Indication of versions of ROMs installed in the image control, printer control, finisher, and Z-fold.
⑩	RD-mode setting		
⑪	ISW updating		
⑫	Setting date input		

[3] Setting Software DIP Switches

1. Procedure

Bring up the Software DIP SW Setting screen and set software DIP switches.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select "① Software DIP SW setting".
3	[Software DIP SW setting screen] Select a DIP switch number. Use the or key or numeric keys. To use numeric keys, press the DIP switch number key at the left before entering a DIP switch number.
4	Select a bit number of the selected DIP switch. Use the or key or numeric keys. To use numeric keys, press the bit number key at the upper center before entering a DIP switch number.
5	Select ON (=1), or OFF (=0) of the switch. Use the or key. : Sets 1. : Sets 0.
6	Press the key to return to the Memory setting mode menu Screen.

For the function of each switch, refer to "list of Software DIP Switches".

< List of Software Switches >

DIPSW No.	Bit	Function	0	1	Initial Value		
					Japan	Inch	Metric
DIPSW 1	0	Condition for stopping copying after indication of toner supply	* 1	* 1	1	1	1
	1				0	0	0
	2	Method for stopping copying after indication of toner supply	* 2	* 2	1	1	1
	3				0	0	0
	4	Inhibition of copying when PM count is reached	Disabled	Inhibited	0	0	0
	5				0	0	0
	6	Number of copies made before inhibition of copying when PM count is reached	* 3	* 3	0	0	0
DIPSW2	7				0	0	0
	0	Hard disk connection	Disconnected	Connected	0	0	0
	1	Electrode cleaning cycle (when power is turned ON, fixing temperature is 50°C or less)	* 4	* 4	0	0	0
	2				0	0	0
	3				0	0	0
	4	Electrode cleaning cycle (after power is turned ON)	* 5	* 5	0	0	0
	5				0	0	0
DIPSW3	6	-	-	-	0	0	0
	7	-	-	-	0	0	0
	0	-	-	-	0	0	0
	1	SC latch	Unlatched	Latched	0	0	0
	2	25, 36, 47 mode password request (password: 9272)	Not requested	Requested	0	0	0
	3	Charger cleaning function	ON	OFF	0	0	0
	4	Transfer/separation cleaning function	ON	OFF	0	0	0
DIPSW4	5	-	-	-	0	0	0
	6	47 mode 15-01 data collection clearing	Disabled	Enabled	0	0	0
	7	-	-	-	0	0	0
	0	ADF automatic skew adjustment	Enabled	Disabled	0	0	0
	1	Inhibition of postcard double sided copy	Disabled	Enabled	0	0	0
	2	Destination selection	* 6	* 6	0	1	0
	3				0	0	1
DIPSW5	4	Key counter removal recovery	Disabled	Enabled	0	0	0
	5	Inhibition of magnified APS	Enabled	Disabled	0	1	0
	6	Fixed magnification rate setting change in key operator mode	Enabled	Disabled	1	0	0
	7	A3 (11x17) counting method	Incremented by 1	Incremented by 2	0	0	0
	0	Image density selection (Toner concentration threshold)	* 7	* 7	0	0	0
	1				0	0	0
	2	Image density selection (laser PWM)	* 8	* 8	1	1	1
DIPSW 6	3				0	0	0
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	-	-	-	0	0	0
	7	-	-	-	0	0	0
	0				0	0	0
	1	Transfer/separation output for plain paper	* 9	* 9	0	0	0
DIPSW 6	2				0	0	0
	3	Transfer/separation output for thick paper	* 10	* 10	0	0	0
	4				0	0	0
	5	Transfer/separation output for thin paper	* 11	* 11	0	0	0
	6				0	0	0
	7	-	-	-	0	0	0

ADJUSTMENT

DIPSW No.	Bit	Function	0	1	Initial Value		
					Japan	Inch	Metric
DIPSW 7	0	Toner guide roller current correction	* 12	* 12	0	0	0
	1		-	-	0	0	0
	2	-	-	-	0	0	0
	3	-	-	-	0	0	0
	4	-	-	-	0	0	0
	5	Transfer/separation output for recycled paper	* 13	* 13	0	0	0
	6				0	0	0
	7				0	0	0
DIPSW8	0	-	-	-	0	0	0
	1	-	-	-	0	0	0
	2	Fixing roller initial rotation	* 14	* 14	0	0	0
	3				1	1	1
	4	Fixing roller initial rotation time setting	* 15	* 15	0	1	1
	5				0	0	0
	6	A3(11 x 17) PM counter switch	1 count	2 count	0	0	0
	7	Store on hard disk	Enable	Disable	0	0	0
DIPSW 9	0	Operation at key counter removal (copy)	Same as stop key	Immediate stop (JAM)	0	0	0
	1	Operation at key counter removal (print)	Ignored	Same as DIPSW9-0	0	0	0
	2	Message switching	* 16	* 16	0	0	0
	3				0	0	0
	4				0	0	0
	5	Copy count limit	* 17	* 17	0	0	0
	6				0	0	0
	7				0	0	0
DIPSW10	0	Page memory allocation when powered.	* 18	* 18	0	0	0
	1				0	0	0
	2	Page memory allocation when job starts	* 19	* 19	0	0	0
	3	-	-	-	0	0	0
	4				0	0	0
	5	Transfer/separation output for high-quality paper	* 20	* 20	0	0	0
	6				0	0	0
	7				0	0	0
DIPSW11	0	-	-	-	0	0	0
	1	-	-	-	0	0	0
	2	Index paper rear end erasing amount	3 mm erased	1 mm erased	0	0	0
	3	SC/E code screen switchover	Switched	Not switched (All are F codes)	0	0	0
	4	Selection of filter for jagged edges on slanting lines	Not selected	Selected	0	0	0
	5	Tone switchover in photo mode	2bitED-2dot PWM	1bitED-2dot PWM	0	0	0
	6	-	-	-	0	0	0
	7	JAM indication screen type	Without Jam code	With Jam code	0	0	0
DIPSW 12	0	Black stripe creation interval	Every 10 copies	Every 50 copies	0	0	0
	1	-	-	-	0	0	0
	2	-	-	-	0	0	0
	3	Printer automatic centering correction	Enable	Disable	0	0	0
	4	High voltage output in 36/47 mode	Not output	Output	1	1	1
	5	-	-	-	0	0	0
	6	-	-	-	0	0	0
	7	-	-	-	0	0	0

DIPSW No.	Bit	Function	0	1	Initial Value		
					Japan	Inch	Metric
DIPSW 13	0	Size detection 1	A5	5.5 x 8.5	0	1	0
	1	Size detection 2	A4R	8.5 x 11R	0	1	0
	2	Size detection 3	8.5 x 14	F4	0	0	1
	3	Size detection 4	* 21	* 21	0	0	0
	4				0	1	0
	5	F4 size detection	* 22	* 22	0	0	0
	6				0	0	0
	7	-	-	-	0	0	0
DIPSW14	0	Size detection 5 (main body)	B4 : 11 x 17/ B5 : 8.5 x 11/B5R	8K/16K/16KR	0	0	0
	1	-	-	-	0	0	0
	2	-	-	-	0	0	0
	3	Size detection 5 (by-pass feed)	B4 : 11 x 17/ B5 : 8.5 x 11/B5R	8K/16K/16KR	0	0	0
	4	Size detection 5 (platen)	B4 : 11 x 17/ B5 : 8.5 x 11/B5R	8K/16K/16KR	0	0	0
	5	Size detection 5 (ADF)	B4 : 11 x 17/ B5 : 8.5 x 11/B5R	8K/16K/16KR	0	0	0
	6	Size detection 5 (PI)	B4 : 11 x 17/ B5 : 8.5 x 11/B5R	8K/16K/16KR	0	0	0
	7	-	-	-	0	0	0
DIPSW15	0	-	-	-	0	0	0
	1	Maximum number of sheets to an be sta- pled	* 23	* 23	0	0	0
	2				0	0	0
	3	FNS alarm stop SW	* 24	* 24	0	0	0
	4				0	0	0
	5	RD mode connection recognition	Disconnect	Connect	0	0	0
	6	Dmax. value in printer mode	1.43	1.35	0	0	0
	7	-	-	-	0	0	0
DIPSW16	0	-	-	-	0	0	0
	1	Multi-job	Reservation enabled	Reservation disabled	0	0	0
	2	-	-	-	0	0	0
	3	C(K) counting in printer mode	Not counted	Counted	0	0	0
	4	TC start date indication (P mode)	Indicated	Not indicated	0	0	0
	5	Non-original area automatic erasure mode	* 25	* 25	0	0	0
	6	judgement level			0	0	0
	7	-	-	-	0	0	0
DIPSW17	0				0	0	0
	1	Weekly timer summer time setting	* 26	* 26	1	1	1
	2				1	1	1
	3				0	0	0
	4				0	0	0
	5	Density selection for scanning tab paper	* 27	* 27	0	0	0
	6				0	0	0
	7	-	-	-	0	0	0
DIPSW18	0	Tray 1's faulty part isolation	Normal	Unavailable	0	0	0
	1	Tray 2's faulty part isolation	Normal	Unavailable	0	0	0
	2	Tray 3's faulty part isolation	Normal	Unavailable	0	0	0
	3	LCT faulty part isolation	Normal	Unavailable	0	0	0
	4	ADF faulty part isolation	Normal	Unavailable	0	0	0
	5	Folding, stapling and three-holding faulty part isolation	Normal	Unavailable	0	0	0
	6	PI faulty part isolation	Normal	Unavailable	0	0	0
	7	HDD faulty part isolation	Normal	Unavailable	0	0	0

ADJUSTMENT

DIPSW No.	Bit	Function	0	1	Initial Value		
					Japan	Inch	Metric
DIPSW 19	0	-	-	-	0	0	0
	1				0	0	0
	2	Fixing temperature setting switch over	* 28	* 28	0	0	0
	3				0	0	0
	4	PZ-fold faulty part isolation	Normal	Unavailable	0	0	0
	5	PK faulty part isolation	Normal	Unavailable	0	0	0
	6	IP scanner default resolution	* 29	* 29	0	0	0
	7				0	0	0
DIPSW20	0	Group stapling	Disabled	Enabled	0	0	0
	1	Original size scanning with shift function (Note1)	Normal	Original priority	0	0	0
	2	Stamp page number switching	Based on original	Based on transfer paper	0	0	0
	3	Keyboard layout	ABC layout	QWERTY layout	0	0	0
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	-	-	-	0	0	0
	7	Tandem connection	Disconnected	Connected	0	0	0
DIPSW21	0	Mixed sized print stapling inhibition (print)	Enabled (realtime output)	Disabled (batch processing)	0	0	0
	1	LCT size setting in key operator mode	Disabled	Enabled	0	0	0
	2	Original count display	Displayed	Not displayed	0	0	0
	3	-	-	-	0	0	0
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	Special paper APS response	Disabled	Enabled (except thick paper)	0	0	0
	7	-	-	-	0	0	0
DIPSW22	0	IP address setting	Inhibited	Allowed	1	1	1
	1	Number of punched holes	* 30	* 30	0	1	0
	2				0	0	1
	3	Image reference position of unspecified size of paper	-	-	0	0	0
	4	Power save button function	Enabled	Disabled	0	0	0
	5	-	-	-	0	0	0
	6	FNS no staple operation	Staple supply requested	Request for staple supply and stapling canceled	0	0	0
	7	-	-	-	0	0	0

Note1:When "Normal" is selected, the original size is compared with the copy paper size and the smaller one is assumed to be the image area size. When "Original priority" is selected, the original size is compared assumed to be the image area size only when the image shift mode is selected.

DIPSW No.	Bit	Function	0	1	Initial Value		
					Japan	Inch	Metric
DIPSW23	0	-	-	-	0	0	0
	1	Operation when printer EKC password is not matched	Counted and output to EKC or other user domain	Not output (display it on the JOB list that is not produced)	0	0	0
	2	Image density selection (toner density selection of developer)	* 31	* 31	0	0	0
	3	-	-	-	0	0	0
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	Registration of by-pass special paper setting for JOB memory	Prohibited	Allowed	0	0	0
	7	Ejection of the paper 2 to sub-tray (IP)	Face-down	Face-up	0	0	0
DIPSW24	0	Method of accessing Hard disk JOB	Password	Password + file name	0	0	0
	1	-	-	-	0	0	0
	2	-	-	-	0	0	0
	3	-	-	-	0	0	0
	4	Maximum number of sheets with Z-folding (main tray)(	* 32	* 32	0	0	0
	5	-	-	-	0	0	0
	6	Maximum number of sheets with Z-folding + stapling (main tray)(	* 33	* 33	0	0	0
	7	-	-	-	0	0	0

ADJUSTMENT

DIPSW No.	Bit	Function	0	1	Initial Value		
					Japan	Inch	Metric
DIPSW27	0	Image's gray background control at power ON (toner density reduction control) *34	Not performed	Performed	0	0	0
	1	Image's gray background control at power ON (toner recycle MC control during printing) *34	Not performed	Performed	0	0	0
	2	Toner supply operation (use prohibited)	Performed	Not performed	0	0	0
	3	Image's gray background control at power ON (drum/developer rotation control at power ON after γ correction) *34	Not performed	Performed	0	0	0
	4	Image density optimization control (use prohibited)	Performed	Not performed	0	0	0
	5	Image's gray background control at power ON (toner recycle MC ON control during drum/ developer rotation performed when the power is turned ON) *34	Not performed	Performed	0	0	0
	6	Image's gray background control at power ON (toner recycle MC ON control during Dmax and γ correction) *34	Not performed	Performed	0	0	0
	7	-	-	-	0	0	0
DIPSW28	0	-	-	-	0	0	0
	1	-	-	-	0	0	0
	2	-	-	-	0	0	0
	3	Limitation of punch function	Selected	Not selected	0	0	0
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	-	-	-	0	0	0
	7	-	-	-	0	0	0
DIPSW29	0	-	-	-	0	0	0
	1	-	-	-	0	0	0
	2	-	-	-	0	0	0
	3	-	-	-	0	0	0
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	-	-	-	0	0	0
	7	-	-	-	0	0	0
DIPSW30	0	-	-	-	0	0	0
	1	25 mode collection data 7-12 for checking	Display restriction	No display restriction	0	0	0
	2	-	-	-	0	0	0
	3	-	-	-	1	1	1
	4	-	-	-	0	0	0
	5	-	-	-	0	0	0
	6	-	-	-	0	0	0
	7	Passwords to save/access hard disk JOB	Not displayed	Displayed	0	0	0

- *1 Condition for stopping copying after indication of toner supply request

Mode	1-1	1-0
Stops after printing 1,500 copies	0	0
Stops after printing 3,000 copies	0	1
Stops after printing 4,000 copies	1	0
Stops after printing 5,000 copies	1	1

- *2 Method for stopping copying after indication of toner supply request

Mode	1-3	1-2
Stops after ejecting the paper remaining in the machine	0	0
Stops after printing specified number of copies	0	1
Stops at the end of the current job	1	0
Does not stop	1	1

- *3 Number of copies made before inhibition of copying when PM count is reached

Mode	1-7	1-6	1-5
1,000 copies	0	0	0
2,000 copies	0	0	1
3,000 copies	0	1	0
4,000 copies	0	1	1
5,000 copies	1	0	0
1,000 copies	1	0	1
1,000 copies	1	1	0
1,000 copies	1	1	1

- *4 Electrode cleaning cycle (fixing temperature is 50°C or lower when power is turned ON)

Mode	2-3	2-2	2-1
When power is turned ON	0	0	0
5,000 copies	0	0	1
10,000 copies	0	1	0
15,000 copies	0	1	1
20,000 copies	1	0	0
25,000 copies	1	0	1
30,000 copies	1	1	0
Not cleaned	1	1	1

- *5 Electrode cleaning cycle (after power is turned ON)

Mode	2-5	2-4
10,000 copies	0	0
20,000 copies	0	1
30,000 copies	1	0
40,000 copies	1	1

- *6 Destination switchover

Mode	4-3	4-2
Japan	0	0
Inch area	0	1
Metric area	1	0

- *7 Image density selection
(toner concentration threshold)

These bits set the read level of the toner concentration patch formed on the drum to determine the toner concentration. Against image excessive density, image blur, and toner scattering in all tone areas, the setting should be made by shifting the threshold of black color to the positive side.

Against insufficient density in all tone areas, shift to the negative side.

- Standard -10: The image becomes darker.
- Standard +10: The image becomes lighter.
- Standard +20: The image becomes far lighter.

Mode	5-1	5-0
Standard	0	0
Standard -10	0	1
Standard +10	1	0
Standard +20	1	1

Note: There are three DIP switches to change the image density : 5-0/1 (toner concentration threshold), 5-2/3 (laser PWM), and 23-2/3 (toner density of developer).

The priority of order of these adjustments are as follows :

- (1) Laser PWM
- (2) Toner density of developer
- (3) Toner concentration threshold

ADJUSTMENT

*8 Image density selection

These bits set image write laser PWM. Against excessive density of 100% black color, thick letters and lines, and excessive toner consumption, the setting should be made by selecting "light." In the opposite case, select "dark."

Mode	5-3	5-2
Darker (255)	0	0
Normal (235)	0	1
Lighter (215)	1	0

Note: There are three DIP switches to change the image density :

- 5-0/1 (toner concentration threshold),
- 5-2/3 (laser PWM), and 23-2/3 (toner density of developer). The priority of order of these adjustments are as follows:
- (1) Laser PWM
- (2) Toner density of developer
- (3) Toner concentration threshold

*9 Transfer/separation output for plain paper

These bits are used when "----", "Normal", "Color", "Special" or "Seal" is selected for "Paper type/special size setting" in the key operator mode.

When "User paper" is selected with this bit, the transfer/separation output for the "user paper setting" made in the 36 mode is applied.

When "No specification" is selected, the output data by destination and paper size (metric or inch system) (**Japan** /metric: 64 g/m² plain paper, Inch: 20 lb plain paper, **Inch area** / Inch 20 lb plain paper, metric: 80 g/m² plain paper, **Metric area** / metric: 80 g/m² plain paper, Inch: 20lb plain paper) is used.

Mode	6-2	6-1	6-0
No specification	0	0	0
Not used	0	0	1
Not used	0	1	0
Not used	0	1	1
Recycled paper 1 (Japan)	1	0	0
Recycled paper 2 (Inch area)	1	0	1
Recycled paper 3 (Metric area)	1	1	0
User paper	1	1	1

*10 Transfer/separation output for thick paper

This bit is used when "Thick" is selected for "Paper type/special size setting" in the key operator mode to change transfer/separation output, linear speed, and fixing temperature.

When "No specification" is selected, standard data for 170 g/m² or heavier paper is used.

- 170 g/m² or heavier (TSL OFF) : When toner is scattered around the image.
- Plain paper : Transfer / separation data for plain paper of each destination is used to set only the line speed and fixing temperature for thick paper. This setting is applied when the fixing condition is insufficient even though paper is not so thick.

Mode	6-4	6-3
No specification	0	0
170 g/m ² or more (TSL OFF)	0	1
Plain paper	1	0

*11 Transfer/separation output for thin paper

This bit is used when "Thin" is selected for "Paper type/special size setting" in the key operator mode.

When "No specification" is selected, the output data by destination (Japan: 52.4 g/m² paper, Inch area: 16 lb paper, Metric area: 48 g/m² paper) is used.

Mode	6-6	6-5
No specification	0	0
52.4 g/m ² paper	0	1
64 g/m ² paper	1	0

*12 Toner guide roller current correction

When the room temperature causes defect cleaning, the bias value of the toner guide roller should be changed to +10 A or +20 A. If the original setting value is changed without any defective cleaning observed, the drum can be damaged, or the toner may be spilled. In this case, the use of copier is never recommended.

Mode	7-1	7-0
Standard	0	0
Approx. +10 A	0	1
Approx. +20 A	1	0
No correction	1	1

*13 Transfer/separation output for recycled paper

These bits are used when "Recycle" is selected for "Paper type/special size setting" in the key operator mode.

When "User paper" is selected with these bits, the transfer/separation output for the user paper setting made in the 36 mode is applied. When "No specification" is selected, output data by destination and paper size (metric or inch series) (**Japan**/metric: 64 g/m² standard paper, **Inch area/inch**: 20 lb standard paper, AB: 80 g/m² standard paper **Metric area/metric**: 80 g/m² standard paper, inch: 20 lb standard paper) is used.

When humid paper causes uneven image, select "humid paper 1/2/3".

Mode	7-7	7-6	7-5
No specification	0	0	0
64 g/m ² standard paper (Japan)	0	0	1
20 lb standard paper (USA)	0	1	0
80g/m ² standard paper (Europe)	0	1	1
Humid paper 1 (Japan)	1	0	0
Humid paper 2 (USA)	1	0	1
Humid paper 3 (Europe)	1	1	0
User paper	1	1	1

*14 Fixing roller initial rotation

Fixing may be insufficient if the temperature of the place where the machine is installed is low. To prevent this, increase the warm-up time (fixing roller initial rotation time) to allow the fixing roller to be evenly warmed up. This bit specifies the condition(s) under which initial rotation of the fixing roller is required.

- Low temperature: Initial rotation of the fixing roller is carried out only under the low temperature condition.
- Low and normal temperatures: Initial rotation of the fixing roller is carried out under low and normal temperature conditions.
- Low, normal, and high temperatures: Initial rotation of the fixing roller is carried out under low, normal, and high temperature conditions.

Mode	8-3	8-2
Low temperature	0	0
Low and normal temperature	0	1
Low, normal, and high temperatures	1	0
No initial rotation	1	1

*15 Fixing roller initial rotation time setting

This bit sets the maximum time of initial rotation of the fixing roller.

Mode	8-5	8-4
2 minutes (Japan)	0	0
3 minutes (Inch and Metric series)	0	1
4 minutes	1	0
10 minutes	1	1

*16 Message switching

Mode	9-3	9-2
Please insert key counter.	0	0
Please insert copy card.	0	1
Please insert coin.	1	0
Please insert key counter.	1	1

ADJUSTMENT

*17 Copy count limit

Mode	9-7	9-6	9-5	9-4
No limit	0	0	0	0
1 copy	0	0	0	1
3 copies	0	0	1	0
5 copies	0	0	1	1
9 copies	0	1	0	0
10 copies	0	1	0	1
20 copies	0	1	1	0
30 copies	0	1	1	1
50 copies	1	0	0	0
99 copies	1	0	0	1
No limit	1	0	1	0
No limit	1	0	1	1
No limit	1	1	0	0
No limit	1	1	0	1
No limit	1	1	1	0
No limit	1	1	1	1

*18 Page memory allocation when powered

Mode	10-1	10-0
No allocation	0	0
32 MB	0	1
64 MB	1	0

*19 Page memory allocation when job starts

When memory overflow occurs in a mode where page memory is used, this bit allocates page memory at the start of job to print out copied paper, the data of which was already read in the memory.

Page memory quantity differs as in the following table, according to the number of gradation.

1 bit ED	18 MB (A3 x 2)
2 bit ED	36 MB (A3 x 2)

Mode	10-2
No allocation	0
Allocated	1

When "Allocated" is selected by DIP switch 10-0 or 10-1 with power supply ON, this setting has priority.

*20 Transfer/separation output for high-quality paper

These bits are used when "High-quality" is selected for "Paper type/special size setting" in the key operator mode.

When "No specification" is selected, output data by paper size (metric or inch system) (metric: 64 g/m² standard paper, Inch: 20 lb standard paper) is used.

Mode	10-7	10-6	10-5	10-4
No specification	0	0	0	0
64 g/m ² paper for printing press	0	0	0	1
80g/m ² paper for printing press	0	0	1	0

*21 Size detection 4

Destination	Mode	13-4	13-3
Metric series	A5R	0	0
	B6R	0	1
Inch series	5.5 x 8.5R	1	0

*22 F4 size detection

Mode	13-6	13-5
8 x 13	0	0
8.25 x 13	0	1
8.125 x 13.25	1	0
8.5 x 13	1	1

*23 Maximum number of sheets that can be stapled

Mode	15-2	15-1
50 sheets	0	0
45 sheets	0	1
40 sheets	1	0
35 sheets	1	1

*24 FNS alarm stop SW

Mode	15-4	15-3
Stop immediately after detection	0	0
Stop at end of copy after detection	0	1
No alarm stop	1	0
No alarm stop	1	1

*25 Selection of area to be erased in non-original area automatic erasure

These bits are used to make a setting associated with the non-original automatic erasure mode (application function).

Mode	16-6	16-5
Standard	0	0
Dark original	0	1
Coping with light interference	1	0

*26 Weekly timer summer time setting

Mode	17-3	17-2	17-1	17-0
0 minute	0	0	0	0
10 minutes	0	0	0	1
20 minutes	0	0	1	0
30 minutes	0	0	1	1
40 minutes	0	1	0	0
50 minutes	0	1	0	1
60 minutes	0	1	1	0
70 minutes	0	1	1	1
80 minutes	1	0	0	0
90 minutes	1	0	0	1
100 minutes	1	0	1	0
110 minutes	1	0	1	1
120 minutes	1	1	0	0
130 minutes	1	1	0	1
140 minutes	1	1	1	0
150 minutes	1	1	1	1

*27 Density selection for scanning tab paper

The higher the brightness level, the higher the density.

Mode	17-6	17-5	17-4
80 (brightness level)	0	0	0
40	0	0	1
60	0	1	0
100	0	1	1
120	1	0	0
160	1	0	1
200	1	1	0
255(not clipped)	1	1	1

*28 Fixing temperature setting switch over

This setting is performed to change fixing temperature when fixing is insufficient or paper curl is excessive.

This setting is effective only when standard paper is used. Therefore, it is not applied when thick or thin paper is used or temperature is specified in power mode.

- Standard Standard setting value
- Standard+ α Set when fixing is insufficient
- Standard- α Set when paper curl is excessive

Mode	19-3	19-2	19-1
Standard	0	0	0
Standard+5°C	0	0	1
Standard+10°C	0	1	0
Standard+15°C	0	1	1
Standard-5°C	1	0	0
Standard-10°C	1	0	1
Standard-15°C	1	1	0
Standard+20°C	1	1	1

*29 IP scanner default resolution

Mode	19-7	19-6
400dpi	0	0
600dpi	0	1
200dpi	1	0
300dpi	1	1

*30 Number of punched holes

Mode	22-2	22-1
2 holes (Japan)	0	0
3 holes (Inch area)	0	1
4 holes (Metric area)	1	0

ADJUSTMENT

*31 Image density selection (toner density selection of developer)

These bits set the toner density of developer by changing toner supply threshold and developing sleeve rotation speed with image density unchanged.

Decrease toner density when the image is gray background or toner is scattered. Increase toner density when the image is unevenly transferred or white spots occur.

Mode	23-3	23-2
Standard toner density	0	0
Approx. 0.75% up	0	1
Approx. 0.75% down	1	0
Approx. 1.5% down	1	1

Note: There are three DIP switches to change the image density : 5-0/1 (toner concentration threshold), 5-2/3 (lase PWM), and 23-2/3 (toner density of developer). The priority of order of these adjustment are as follows:

- (1) Laser PWM
- (2) Toner density of developer
- (3) Toner concentration threshold

*32 Maximum number of sheets with z-folding
(main tray)

Mode	24-5	24-4
Up to 50 sheets	0	0
Up to 40 sheets	0	1
Up to 30 sheets	1	0
Up to 20 sheets	1	1

*33 Maximum number of sheets with z-folding + stapling

Mode	24-7	24-6
Up to 5 sheets	0	0
Up to 8 sheets	0	1
Up to 10 sheets	1	0
Up to 3 sheets	1	1

*34 Image's gray background control at power ON

If an image's gray background problem occurs while making about 100 copies after power ON (the fixing temperature is 50°C or lower), set bits 0, 1, 3, 5, 6, and 7 of DIPSW27 to 1.

Note: When this setting is used, be sure to set six bits to 1 all together. And never set bits 2 and 4 of DIPSW27 to 1.

[4] Setting the Paper Size

When the LCT paper type is changed, it must be stored in the main body. This setting is effective when an optional LCT is added.

Select a paper size among standard, non-standard paper sizes. After selecting a tray size, specify a paper size.

1. Setting the standard size

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select " [2] Paper size setting".
3	[Paper size setting mode Screen] Press the [STD SIZE] key.
4	Press the [▲] or [▼] button to select a paper size.
5	Press the [OK] key to finish setting. To cancel the new setting, press the [CANCEL] key. Pressing either key will display the Memory setting mode menu Screen again.

2. Setting the non-standard size

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select " [2] Tray Size Setting."
3	[Paper size setting mode Screen] Press the [Non STD size] key.
4	[Paper size input Screen] Press the key for specifying the main (vertical) scanning direction to highlight it.
5	Press the [▲] or [▼] key or numeric keys to enter the size in the main (vertical) scanning direction. Max. 314 mm
6	Press the key for specifying the sub (horizontal) scanning direction to highlight it.
7	Press the [▲] or [▼] key or numeric keys to enter the size in the sub (horizontal) scanning direction. Max. 223 mm(LT-402), 459mm(LT-412)
8	Press the [OK] key to finish setting. To cancel the new setting, press the [CANCEL] key. Pressing either key will display the Memory setting mode menu Screen again.

3. Setting the wide paper

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select "② Paper size setting."
3	[Paper size setting mode Screen] Press the [Wide size paper] key.
4	[Paper size selecting Screen] Press the [▲] or [▼] key to select a wide paper size.
5	[Input size] key.
6	[Paper size input Screen] Press the key for specifying the main (vertical) scanning direction to highlight it.
7	Press the [▲] or [▼] key or numeric keys to enter the size in the main (vertical) scanning direction. Max. 314 mm
8	Press the button for specifying the sub (horizontal) scanning direction to highlight it.
9	Press the [▲] or [▼] key or numeric keys to enter the size in the sub (horizontal) scanning direction. Max. 223 mm(C-403), 459 mm(C-404)
10	Press the [OK] key to finish setting. To cancel the new setting, press the [CANCEL] key. Pressing either key will display the Memory setting mode menu Screen again.

Reference 1:

Each time the current tray size is changed on this screen, the new setting will be written into the non-volatile memory.

[5] PM Count Resetting

Care should be taken not to reset the PM count by mistake.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select "③ PM count".
3	[PM count/cycle Screen] Press the [COUNT RESET] key.
4	[Reset Confirmation Screen] Press the [YES] key. The PM count is reset and the start date is input automatically. Pressing the [NO] key closes the Reset Confirmation screen at once.
5	Press the [OK] key to finish setting. To cancel the new setting, press the [CANCEL] key. Pressing either key will display the Memory setting mode menu Screen again.

[6] Setting the PM Cycle

This function allows you to change the PM cycle.

Caution: The PM cycle is factory-set. Use this function to change the factory-set PM cycle.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select "③ PM count".
3	[PM count/cycle Screen] Press the [PM Cycle Setting] key.
4	After making sure that three digits of the cycle value are displayed in reverse video, enter a desired cycle value using numeric keys. Only the three digits of the cycle value can be entered. The entered digits will be shifted to the left one after another.
5	Press the [OK] key to finish setting. To cancel the new setting, press the [CANCEL] key. Pressing either key will display the Memory setting mode menu Screen again.

[7] Collecting Data

This function allows you to view various data retained by the machine.

1. Data that can be Viewed

No.	Data Type	Pre-operation
1	Total count of each paper size	Enter the 25 mode, select "① Software DIP SW Setting", and set bit 1 of address 30-1 to 1. (Note)
2	Copy count of each paper size	
3	Print count of each paper size	
4	RADF count	
5	Pixel ratio of each section	
6	Pixel ratio ranking list	
7	JAM occurrence count	
8	Count of each copy mode	
9	SC occurrence count	
10	Paper conveyance time data	
11	JAM count of each section	
12	SC count of each section	

Note: When bit 1 of DIP switch 30 is set to 0, only collected data 1 to collected data 6 can be viewed.

2. Viewing Collecting Data No.1 to No.6

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select "④ Data collection".
3	[Collecting data menu Screen] Select the collecting data you want to view by pressing one of numeric keys ① to ⑥.
4	[Individual data view Screen] View the selected data by scrolling the screen using the and keys.
5	Press the key to return to the Memory setting mode Screen.

3. Viewing Collecting Data No.7 to No.12

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select "① Software DIP SW setting".
3	[Software DIP SW Setting Screen] Set bit 1 of DIP switch 30-1 to 1.
4	Press the key to return to the Memory setting mode menu Screen.
5	[Memory setting mode menu Screen] Select "④ Data Collection".
6	[Collecting data menu Screen] Select the collected data you want to view by pressing one of numeric keys ⑦ to ⑫. To select the key ⑪ or later press the key. If the key is pressed with key ⑪ displayed, the Collected Data Selection screen containing keys ① to ⑫ appears again.
7	[Individual data view Screen] View the selected data by scrolling the screen using the and keys. (Note)
8	Press the key to return to the Memory setting mode menu Screen.

Note: On the Individual Data View screen showing the JAM count of each section (collected data ⑪) or SC count of each section (collected data ⑫), the key appears.
Pressing the key resets the selected data count.

4. Details on Display Data

(1) Collecting data No.1 to No.3: Total/copy/print counts of each paper size

NO	Destination			Maximum count	Remarks
	Japan	Inch area	Metric area		
1	A2	17x22	A2		
2	A3	11x17	A3		
3	B4	8.5x14	B4 (8K)		
4	A4	8.5x11	A4		
5	B5	5.5x8.5	B5 (16K)		
6	A5	-	A5		
7	B6	-	F4		
8	8.5x14	-	-		
9	8.5x11	A4	-		
10	Special	Special	Special	99999999	All counters are 8-digit counters.

1. Each time a printed copy is ejected, the counter is incremented by 1 regardless of the paper size.
2. Any size other than paper sizes 1-9 is counted as Special size. (SEL/LEF are counted as the same size.)

ADJUSTMENT

(2) Collecting data No.4: RADF mode

NO	Items	Maximum count	Remarks
1	Number of originals fed in ADF mode	99999999	All counters are 8-digit counters.
2	Number of originals fed in RADF mode		
3	Number of 1-sided mixed original fed		
4	Number of 2-sided mixed original fed		
5	Number of 1-sided Z-folded mode original fed		
6	Number of 2-sided Z-folded mode original fed		
7			
8			
9			
10			
11	Undefined		
12			
13			
14			
15			
16			

1. The counter is incremented each time one original side has been scanned in each mode.
2. Counters 1 and 2 count original sides independently of counters 3-7.

(3) Collecting data No.5: Pixel ratio of each section *1

This allows checking the average pixel ratio of 5000 prints for the latest 30 data.

(4) Collecting data No.6: Pixel ratio ranking list *1

This allows checking pixel ratio data, number of prints, transfer paper size, mode, and date for the top 15 job data ranked from highest rates of pixel ratio.

The pixel ratio rank list is allowed to contain only those jobs which have five or more copies, so that jobs that have made erroneous copies will be excluded from the list.

(5) Collecting data No. 7: JAM data of time series

A jam code, total count, date and time of occurrence, tray type, paper size, and magnification can be displayed for the latest 100 jams.

*1 This pixel ratio is the theoretical value obtained by converting the black dot area on the image data and the area of the transfer paper, therefore it is different from the black ratio obtained by the actual printing.

(6) Collecting data No.8: JAM count / Collecting data No.11: JAM count of each section (can be reset)

NO	Description of JAM		Jam position display on operation panel	Maximum count	Counting condition
	Location of jam	Code displayed when display of jam code is selected by 25DIPSW			
1	By-pass paper feed	10-1	6		
2		10-2	6		
3	Tray 1 paper feed	11-1	1		
4		11-2	1		
5	Tray 2 paper feed	12-1	2		
6		12-2	2		
7	Tray 3 paper feed	13-1	3		
8		13-2	3		
9	Tray 4 paper feed	14-1	4		
10	(Japan only)	14-2	4		
11	LCT paper feed	15-1	5		
12		15-2	5		
13	Paper feed conveyance (common to all trays)	17-1	9		
14	Paper feed conveyance (tray 1)	17-2	7		
15	Paper feed conveyance (tray 2/3/4)(Japan only)	17-3	7		
16	Paper feed conveyance (tray 2)	17-4	7		
17	Paper feed conveyance (tray 3)	17-5	7		
18	Paper feed conveyance (tray 4)	17-6	7		
19	(Japan only)	17-7	7		
20	LCT	17-8	8		
21	Drum	21-1	10		
22	Second paper feed conveyance	31-1	9		
23		31-2	10		
24		32-1	11		
25		32-2	11		
26	Fixing / Exit	32-3	11		
27		32-4	11		
28		32-5	11		
29		92-1	12		
30		92-2	12		
31	ADU	93-1	13		
32		94-1	13		
33		94-2	13		
34	Vertical conveyance door	19-1	-		
35	LCT	19-2	-		
36	Front door	51-1	-		
37	FNS	71-1	-		
38		71-2	-		

999999

All counts are 6-digit counters.

NO	Description of JAM		Jam position display on operation panel	Maximum count	Counting condition
	Location of jam	Code displayed when display of jam code is selected by 25DIPSW			
39	ADF	61-1	-	999999	All counts are 6-digit counters.
40		61-2	-		
41		62-1	14		
42		62-2	14		
43		62-3	14		
44		62-4	14		
45		62-5	14		
46		62-6	14		
47		62-7	14		
48		62-8	14		
49		62-9	14		
50		62-10	14		
51		63-1	15		
52		63-2	15		
53	FNS	63-3	15		
54		63-4	15		
55		63-5	15		
56		72-16	16		
57		72-17	16		
58		72-18	16		
59		72-19	16		
60		72-20	16		
61		72-21	16		
62		72-22	17		
63		72-23	17		
64		72-24	18		
65		72-25	18		
66		72-26	18		
67		72-27	16		
68	PZ	72-28	16		
69		72-29	16		
70		72-30	16		
71		72-32	19		
72		72-33	19		
73		72-34	19		
74	PI	72-35	17		
75	PK	72-38	20		
76		72-39	20		
77		72-40	20		
78		72-41	20		
79		72-42	20		
80	PK	72-43	16	999999	All counts are 6-digit counters.
81	PZ	72-44	20		
82		72-45	20		
83		72-46	20		
84		72-47	20		
85	FNS	72-48	18		

NO	Description of JAM		Jam position display on operation panel	Maximum count	Counting condition
	Location of jam	Code displayed when display of jam code is selected by 25DIPSW			
86		72-49	17		
87	PI	72-50	17		
88		72-51	17		
89		72-81	16		
90	FNS	72-82	16		
91		72-83	16		
92		72-90	16		
93		72-60	20		
94		72-61	20		
95	PZ	72-62	20		
96		72-63	20		
97		71-3	-		

1. When a jam occurs, the associated counter is incremented by 1 (Static jams are not counted.)

ADJUSTMENT

(7) Collecting Data No.7:Count of each copy mode

NO	Item	Maximum count	Counting condition
1	1-1 mode		
2	1-2 mode		
3	2-1 mode		
4	2-2 mode		
5	ADF1-1 mode		
6	ADF1-2 mode		
7	Mixed original mode		
8	Index original		
9	Z-folded original mode		
10	LEF/portrait, SEF/landscape normal set		
11	LEF/landscape, SEF/portrait normal set		
12	LEF/portrait, SEF/landscape reverse set		
13	LEF/landscape, SEF/portrait reverse set		
14	Auto (text/photo)		
15	Text		
16	Photo		
17	Pencil		
18	Non STD size		
19	1 staple (upper-left)		
20	1 staple (upper-right)		
21	2 staples (left side)		
22	2 staples (top side)		
23	Stapled at left	99999999	All counters are 8-digit counters.
24	Stapled at right		
25	Stapled on top		
26	Three-holding		
27	Stitch and fold		
28	Folding		
29	Main tray: Group		
30	Main tray: Sort		
31	Main tray: Non sort		
32	Sub-tray: Group (FACE DOWN)		
33	Sub-tray: Group (FACE UP)		
34	Sub-tray: Sort (FACE DOWN)		
35	Sub-tray: Sort (FACE UP)		
36	Sub-tray: Non sort (FACE DOWN)		
37	Sub-tray: Non sort (FACE UP)		
38	Cover sheet		
39	Trimmer		
40	Real size copy		
41	Preset magnification E4		
42	Preset magnification E3		
43	Preset magnification E2		
44	Preset magnification E1		
45	Preset magnification R4		

NO	Item	Maximum count	Counting condition
46	Preset magnification R3		
47	Preset magnification R2		
48	Preset magnification R1		
49	User lens mode 1		
50	User lens mode 2		
51	User lens mode 3		
52	ZOOM		
53	Vertical/Horizontal zoom		
54	Maximum ZOOM		
55	Minimum ZOOM		
56	APS		
57	AMS		
58	Auto density (EE)		
59	User density level 1		
60	User density level 2		
61	Interrupted copy		
62	Automatic image rotation cancellation		
63	Inter sheet		
64	Chapter control		
65	Combination		
66	Booklet copy		
67	OHP interleave (copy)		
68	OHP interleave (blank)		
69	Image insert	99999999	All counters are 8-digit counters.
70	Dual Page		
71	Program job		
72	Non-image area erase		
73	Reverse image		
74	Auto repeat		
75	Manual repeat		
76	STD size repeat		
77	Frame erasure		
78	Fold erasure		
79	Auto layout		
80	Full-image Area		
81	Image Shift		
82	Reduction shift		
83	Overlay		
84	Water mark		
85	Stamp		
86	Date / Time		
87	Page		
88	Numbering		
89	Set quantity 1		
90	Set quantity 2-5		
91	Set quantity 6-10		

NO	Item	Maximum count	Counting condition
92	Set quantity 11 or more		All counters are 8-digit counters.
93	Energized time of power condition 1		Total period of time during which image control board is energized. Total period of time during the operation of CPU.
94	Energized time of power condition 2		Total period of time during which remote power supply 2 is on. 1 is counted per minutes.
95	Unused		
96	Energized time of power condition 4		Total period of time during which remote power supply 3 is on. 1 is counted per minutes.
97	Time during low power mode		Total period of time during which low power mode is selected. The count is incremented by 1 per minute.
98	Time during WUP		Total period of time during which fixing unit heater is ON when the fixing is UNREADY. The count is incremented by 1 per second. Data is output per minute.
99	Time during front door open	99999999	Total period of time during which front door is open. The count is incremented by 1 per second. Data is output per minute.
100	Ope. time in 1 side straight exit		Total time from start to end of printing. The count is incremented by 1 per second. Data is output per minute. (Halt time caused by JAM stop, etc. is not included.)
101	Ope. time in 1 side reverse exit		
102	Ope. time in 2 side print		
103	Operation time in ADF mode		Total operation time of ADF. The count is incremented by 1 per second. Data is output per minute.
104	Morning Correction count		The count is incremented by 1 each time correction is made before starting work in the morning.
105	Time during APS sensor on		Total period of time during which APS sensor is ON. The count is incremented by 1 per second. Data is output per minute.
106	N of main tray used jobs		
107	N of sub tray used jobs		
108	N of stapling folding used jobs		
109	N of folding jobs		
110	N of ADF NF occurred		Number of jobs

NO	Item	Maximum count	Counting condition
111	N of ADF special error 1 occurred		Original size detection error occurrence count
112	N of ADF special error 2 occurred		Next original information error occurrence count
113	N of ADF special error 3 occurred		Mixed loading prohibited original size error occurrence count
114	N of Scanner scanned		The count is incremented by 1 each time Platen Mode Copy button is pressed.
115	N of electrode cleaned		
116	N of memory overflow		
117	N of fixing alarm occurred		
118	N of no toner stop occurred		
119	N of AGC retry		
120	N of sub scan beam correct error		
121	N of mis-centering correct error		
122	N of ADF distortion adjust error		
123	N of ADF distortion data error		
124	Compression memory overflow		
125	Page memory overflow (scan)	99999999	
126	Page memory overflow (print)		
127	FNS alarm (tray/trimming)		
128	FNS alarm (staple)		
129	Scanner count		
130	N of ADF special error 4 occurred		Ready-time out error
131	Store for HDD (Sync. with Copying)		
132	Store for HDD (SRV mode scan-> HDD)		
133	Store for PC (SRV mode scan-> HDD)		
134	Store for PC (SRV mode HDD-> PC)		
135	Recall from HDD (SRV mode HDD)		
136	Recall from PC (SRV mode PC)		
137	Image edit count by SRV		
138	Wide paper count (A3W or 11x17W)		
139	Wide paper count (A4W or 8.5x11W)		
140	Wide paper count (A4RW or 8.5x11RW)		
141	Wide paper count (A5W or 5.5x8.5W)		
142	Wide paper count (Others)		
143	Punch		
144	Z-fold		

ADJUSTMENT

- (8) Collecting data No.10: SC count / Collecting data No.12: SC count of each section (can be reset)

NO	Trouble code	Description	Maximum count	Remarks
1	13	1 Paper feed MT EM	9999	All counters are 4-digit counters.
2	13	2 LCT conveyance MT EM		
3	18	10 Tray 1 up MT EM		
4	18	11 Tray 1 up error		
5	18	20 Tray 2 up MT EM error		
6	18	21 Tray 2 up error		
7	18	30 Tray 3 up MT EM error		
8	18	31 Tray 3 up error		
9	18	40 Tray 4 up MT EM error (Japan only)		
10	18	41 Tray 4 up error (Japan only)		
11	18	50 LCT up/down MT EM		
12	18	51 LCT up/down error		
13	18	60 By-pass tray up error		
14	21	1 Charging corona unit cleaning MT error 1		
15	21	2 Charging corona unit cleaning MT error 2		
16	21	3 Charging corona unit cleaning MT error 3		
17	21	4 Charging corona unit cleaning MT error 4		
18	21	5 Transfer/separation corona unit cleaning MT error 1		
19	21	6 Transfer/separation corona unit cleaning MT error 2		
20	21	7 Transfer/separation corona unit cleaning MT error 3		
21	21	8 Transfer/separation corona unit cleaning MT error 4		
22	22	1 Developing suction fan lock		
23	22	2 Cleaner cooling fan lock		
24	23	1 Toner bottle MT EM		
25	23	2 Developing MT EM		
26	23	3 Drum MT error		
27	28	1 Charging EM		
28	28	2 Transfer EM		
29	28	3 Separation EM		
30	29	1 Maximum density correction error 1		
31	29	2 Maximum density correction error 2		
32	29	3 Maximum density correction error 3		
33	29	4 γ correction error 1		
34	29	5 γ correction error 2		
35	29	6 γ correction error 3		
36	29	7 Dot diameter correction error 1		
37	29	8 Dot diameter correction error 2		
38	32	1 Conveyance suction fan lock		
39	32	2 Paper exit fan/2 lock		
40	32	3 Paper exit fan/R lock		
41	32	4 Paper exit fan/F lock		

NO	Trouble code	Description	Maximum count	Remarks
42	33	1 Second paper feed MT EM		
43	34	1 Fixing upper roller high temperature error detection		
44	34	2 Fixing upper roller high temperature error detection		
45	35	1 Fixing upper roller low temperature error detection 1		
46	35	2 Fixing upper roller low temperature error detection 2		
47	35	3 Fixing upper roller low temperature error detection 3		
48	36	1 Fixing upper roller sensor error detection		
49	36	2 Fixing lower roller sensor error detection		
50	41	1 Scanner HP return error		
51	41	2 Polygon MT error		
52	42	1 Scanner cooling fan lock		
53	42	2 Write section cooling fan lock		
54	46	1 APC error		
55	46	2 Scanner FIFO error		
56	46	3 Printer FIFO error		
57	46	5 Compressed input/output FIFO error		
58	46	6 Expansion error		
59	46	8 Index sensor error		
60	46	10 No margin of scanner control		
61	46	11 No margin of printer control		
62	46	12 SVV length error		
63	46	13 Scanner time-out		
64	46	14 Printer time-out		
65	46	15 Expansion device access error		
66	46	16 Compression device access error		
67	46	17 Filter factory error		
68	46	19 Memory device access error on data flow		
69	46	21 Data flow memory mode time-out		
70	46	23 SVV off error		
71	46	24 Black/white collection error		
72	46	25 AOC/AOG Level adjustment error		
73	46	26 Invalid correction data by resolution		
74	46	27 Density conversion (γ curve generation error)		
75	46	29 Calibration start error		
76	46	30 Calibration end error		
77	46	31 APC initial sampling error		
78	46	32 MPC error		
79	46	33 Sub-scan beam correction error		
80	46	34 Unfinished Calibration		
81	46	35 Continuous copy page area error		

9999
All counters are 4-digit counters.

NO	Trouble code	Description	Maximum count	Remarks
82	46	40	HDD initialization trouble	
83	46	41	HDD JOB save error	
84	46	42	HDD periodic cleaning error	
85	46	43	HDD access failure	
86	46	50	Tandem communication error	
87	46	51	Tandem image communication error	
88	46	64	PWMg curve generation failure	
89	46	80	Insufficient/broken message queue	
90	46	81	Invalid message or method parameter	
91	46	82	Invalid task	
92	46	83	Invalid event	
93	46	90	Memory access error	
94	46	91	Header access error	
95	46	99	DIMM initialization error	
96	49	1	- (Controller)	
97	49	2	- (Controller)	
98	49	3	Direct Memory Access error	
99	49	4	- (Controller)	
100	49	5	- (Controller)	
101	50	1	Main body drive serial input error 1	
102	50	2	Main body drive serial input error 2	
103	50	3	Main body drive serial input error 3	
104	50	4	Main body drive serial input error 4	
105	50	5	Drive board communication reception error detection	
106	50	10	Image control board communication connection error	
107	50	11	Detection error of image control board communication serial reception error	
108	52	1	Power supply cooling fan lock	
109	52	2	Main body cooling fan/1 lock	
110	53	1	Fixing MT EM	
111	56	2	Operation section communication error	
112	62	1	ADF fan lock	
113	70	1	FNS communication error	
114	70	2	FNS communication start acknowledgement error detection error	
115	77	1	Shift driving error	
116	77	2	Tray up/down driving error	
117	77	3	Alignment plate/U drive error	
118	77	4	Exit roller drive error	
119	77	5	Exit driving error	
120	77	6	Stapler movement driving error	
121	77	7	Clincher rotation driving error	
122	77	8	Stapler rotation driving error	
123	77	11	Stapler/F error	
124	77	12	Stapler/R error	

9999

All counters are 4-digit counters.

NO	Trouble code	Description	Maximum count	Remarks
125	77	13 Clincher/F driving error		
126	77	14 Clincher/F driving error		
127	77	21 Stopper motor drive error		
128	77	22 Alignment plate/L drive error		
129	77	25 Folding knife motor drive error		
130	77	26 Folding conveyance motor drive error		
131	77	31 Trimmer conveyance drive error		
132	77	32 Trimmer conveyance error		
133	77	33 Trimmer rear end stopper drive error		
134	77	34 Trimmer rear end release motor driving error		
135	77	35 Trimmer press motor driving error		
136	77	36 Trimmer pusher motor driving error		
137	77	37 Trimmer holder motor driving error		
138	77	41 Sheet feeder up motor driving error /L		
139	77	42 Sheet feeder up motor driving error /U		
140	77	43 Sheet feeder conveyance driving error		
141	77	52 Motor drive error for Z-fold stopper 1		
142	77	53 Motor drive error for Z-fold stopper 2		
143	77	54 Punch drive motor driving error		
144	77	81 Gate motor drive error		
145	77	91 Sub-CPU reception error	9999	All counters are 4-digit counters.
146	77	92 Main CPU reception error		
147	80	1 Printer control initial communication error		
148	80	2 Printer control communication error		
149	80	3 Operation panel communication error		
150	80	1* Printer control ISW not written		
151	80	21 VIF control ISW not written		
152	80	30 ISW time-out error		
153	80	31 ISW data error		
154	80	32 ISW write error		
155	80	40 FNS with unwritten ISW		
156	80	41 ZU with unwritten ISW		
157	90	1 ADU drive serial input error 1		
158	90	2 ADU drive serial input error 2		
159	92	1 ADU cooling fan lock		
160	77	44 Punch shift motor driving error		
161	77	45 Not used		
162	77	46 Stacker fan driving error		
163	77	47 Communication error between FNS and PK-5		
164	77	55 PZ punch shift motor driving error		
165	77	56 PZ conveyance motor fan driving error		
166	77	57 PZ punch motor driving error		

Note: When DIP switch is set to 3-1-1, SC34, 35, and 36 are not counted.

[8] Copy Count by Parts to be Replaced (Fixed Parts)

This function allows you to display or reset the copy count for a fixed part or data.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select “⑤ Parts counter.”
3	[Copy count of parts menu Screen] Select “① Count of special parts.”
4	[Copy count of special menu Screen] Data numbers (No.), part names (Name), and count values are displayed in a list format. Using and keys, select a part name. To scroll the screen, use and keys.
5	Press the COUNT RESET key to reset the count value of the part highlighted.
6	Press the RETURN key to return to the Memory setting mode menu Screen.

Copy count parts counter

NO	Part name	Maximum count	Counting condition
1	Web unit	99999999	Count 1 per ejected paper for single sided, 2 for double sided
2	Developer		25DIPSW8-6
3	OPC drum		=0: Count 1 per ejected paper for single sided, 2 for double sided
4	Cleaning blade		=1: For A3, 11x17, 8k, count 2 per ejected paper for single sided, 4 for double sided
5	Toner reclaim roller unit assembly		
6	Charging blade		
7	Charger cleaning block for upper assembly		
8	Charger cleaning block for lower assembly		
9	Drum separation claw		
10	Discharging wire		

NO	Part name	Maximum count	Counting condition
11	Trans./sep. cleaning assembly	99999999	25DIPSW8-6 =0: Count 1 per ejected paper for single sided, 2 for double sided =1: For A3, 11x17, 8k, count 2 per ejected paper for single sided, 4 for double sided
12	Fixing upper roller		
13	Fixing lower roller		
14	Fixing upper claw		
15	Fixing lower claw		
16	Heat insulate sleeve (upper)		
17	Upper roller bearing		
18	Cleaning roller		
19	Toner control board unit		
20	Trans./sep. corona unit		
21	Separation cleaning assembly		
22	Charging wire		
23	Upper roller error detection sensor		
24	Ozone filter		
25	Charging corona unit		
26	PCL assembly		
27	Developer		
28	TSL cover assembly		
29	Tray 1 feed rubber		1 is counted each time the paper from tray 1 is ejected.
30	Tray 1 feed conv/rev rubber		
31	Tray 1 feed clutch		
32	Tray 1 convey clutch		
33	Tray 1 feed count		
34	Tray 2 feed rubber		1 is counted each time the paper from tray 2 is ejected.
35	Tray 2 feed conv/rev rubber		
36	Tray 2 feed clutch		
37	Tray 2 convey clutch		
38	Tray 2 feed count		
39	Tray 3 feed rubber		1 is counted each time the paper from tray 3 is ejected.
40	Tray 3 feed conv/rev rubber		
41	Tray 3 feed clutch		
42	Tray 3 convey clutch		
43	Tray 3 feed count		

NO	Part name	Maximum count	Counting condition
44	Tray 4 feed rubber (Japan only)	99999999	1 is counted each time the paper from tray 4 is ejected.
45	Tray 4 feed conv/rev rubber (Japan only)		
46	Tray 4 feed clutch (Japan only)		
47	Tray 4 convey clutch (Japan only)		
48	Tray 4 feed count (Japan only)		
49	By-pass feed roller		
50	By-pass conveyance/reverse roller		
51	By-pass count		
52	LCT feed roller		
53	LCT conveyance/reverse roller		
54	LCT feed clutch		
55	LCT conveyance clutch		
56	LCT feed count		
57	Loop roller		1 is counted each time the paper from tray 1, tray 2, tray 3, tray 4 and LCT is ejected.
58	V-convey exit feed roller		1 is counted each time the paper from tray 2, tray 3 and tray 4 is ejected.
59	V-convey feed roller/M		1 is counted each time the paper from tray 3 and tray 4 is ejected.
60	V-convey feed roller/ L		1 is counted each time the paper from tray 4 is ejected.
61	V-convey feed clutch 1		1 is counted each time the paper from tray 2, tray 3, and tray 4 is ejected.
62	V-convey feed clutch 2		1 is counted each time the paper from tray 3 and tray 4 is ejected.
63	Web solenoid		Every operation
64	Registration clutch		1 is counted each time single side original is ejected; 2 is counted each time double side paper is ejected.
65	ADU preregistration clutch		1 is counted each time double side paper is ejected (not counted for single side paper)
66	Registration feed count		1 is counted each time single side original is ejected; 2 is counted each time double side original is ejected.
67	Reverse exit count		2 is counted each time single side paper is ejected after being reversed. 0 is counted each time single side paper is ejected straight. 1 is counted each time double side paper is ejected.
68	ADU feed count		1 is counted each time double side paper is ejected (not counted for single side paper)
69	FNS up/down motor		1 is counted each time the paper from FNS main tray is ejected. 1 is counted each time a copy is ejected in stapling mode.

NO	Part name	Maximum count	Counting condition
70	FNS stapler/front	99999999	1 is counted each time a copy is ejected in stapling front 1-point stapling, stapling 2-point stapling, or middle binding mode.
71	FNS stapler/rear		
72	FNS shift motor		1 is counted each time even-numbered paper is ejected.
73	FNS exit opening open/close motor		1 is counted each time large size stapling (A4R/ 8.5x11R or larger) job starts. 1 is counted each time paper is ejected from each section. 1 is counted each time stitch and fold or folding job starts.
74	FNS folding knife motor		1 is counted each time one set of papers in stapling/folding, folding, or three-holding mode is ejected.
75	FNS By-pass SD		1 is counted each time one set of papers in DM folding mode is ejected.
76	FNS DM gate SD		Counted each time one paper is ejected in three-holding mode
77	PI sheet feed clutch/U		Counted each time are paper is fed into PI/U
78	PI feed roller unit/A		
79	PI feed roller unit/B		
80	PI reverse rubber unit		
81	PI torque limiter		
82	PI sheet feed clutch/L		Counted each time one paper is fed into PI/L
83	PI feed roller unit/A		
84	PI feed roller unit/B		
85	PI reverse rubber unit		
86	PI torque limiter		
87	Trimmer knife		1 is counted each time knife movement is made
88	Punched holes (2 holes)		Number of ejected papers with the punch mode selected
89	Punched holes (3 holes)		
90	Punched holes (4 holes)		
91	-		Not used
92	ADF feed roller		Number of originals passes in all modes
93	ADF Separation roller		
94	ADF double-feed prevention rubber		
95	ADF double-feed prevention roller		
96	ADF paper exit solenoid		1 is counted each time one original passes in the double side or the mixed mode
97	ADF feed clutch		single side: Number of originals passes in every single side mode count double side: Number of originals passes in every double side mode x3 counts
98	ADF reverse solenoid		1 is counted each time one original passes in the double side or the mixed mode

NO	Part name	Maximum count	Counting condition
99	ADF pressure roller release solenoid		2 is counted each time one original passes in the double side or the mixed mode
100	Exposure ON time		Unit
101	Sub power switch		1 is counted each time sub power is switched off.
102	Door switch		1 is counted each time front door is opened.
103	Drum separation claw solenoid	99999999	1 is counted each time a paper is ejected, 2 is counted for double-sided.
104	Main power switch		1 is counted each time image control turns ON (number of times CPU is activated from other than sub power supply (SK/SHUT OFF/WT))
105	PI regist clutch		1 is counted each time PI sheet is ejected.
106	Punch motor		Number of papers ejected when punch mode is selected.



124		99999999	
125			
126			
127			
128			

[9] Copy Count by Parts to be Replaced (Optional Parts)

This function allows you to make the following settings for an optional part or data:

1. Copy count resetting
2. Limit value setting
3. Part number setting
4. Part name setting

The above settings can be made for 30 data numbers, No.1 to No.30.

The copy count is incremented by 1 for each side irrespective of the paper size.

1. Resetting the Copy Count by Parts to be Replaced (Optional Parts)

This function allows you to reset the copy count by parts to be replaced (optional parts).

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select the "⑤ Parts counter".
3	[Copy count of part menu Screen] Select the "② Count of each parts".
4	[Copy count of each part Screen] Data numbers (No.), part names (Name), part numbers (P/N), and count/limit values are displayed in a list format. Using and keys, select a part name. To scroll the screen, use and keys.
5	Press the COUNT RESET key to reset the count value of the part highlighted.
6	Press the RETURN key to return to the Memory setting mode menu Screen.

Reference: If the copy count exceeds the limit, the * mark appears to the left of the limit value.

2. Changing the data on the Copy Count by Parts to be Replaced (Optional Parts)

This function allows you to change the limit value, part number, or part name for the desired optional copy count by parts to be replaced (optional parts).

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select the "⑤ Parts counter".
3	[Copy count of part menu Screen] Select the "② Count of each parts".
4	[Copy count of each part Screen] Data numbers (No.), part names (Name), part numbers (P/N), and count/limit values are displayed in a list format. Using and keys, select a data number. To scroll the screen, use and keys.
5	Press the Part Name Set, P/N Set, or Limit Set key.
6	[Data change screen by parts to be replaced] Press the , or key corresponding to the data you want to change.
7	Enter new data using alphabetic and numeric keys.
8	Perform steps 6 and 7 repeatedly to change other data.
9	Press the OK key to allow the new data to take effect. To cancel the new data, press the CANCEL key. Pressing either key will display the Copy count by parts to be replaced (optional parts) screen again.
10	[Data change screen by parts to be replaced] Press the RETURN key to return to the Memory setting mode menu Screen.

Reference1: The characters entered in the data field of each data item will be shifted to the left one after another.

Reference2: When the number of entered characters exceeds 10, the leftmost character will disappear.

[10] Setting Passwords

This function allows you to set the following passwords:

1. Key operator password (4 digits)
This password is required to enter the key operator mode.
2. EKC master key code (8 digits)
This code is necessary when entering various EKC setting modes.
3. Weekly timer password (4 digits)
This password is necessary when entering various weekly timer setting modes.
4. HDD management password (4 digits)
This password is necessary when entering the HDD management modes in the key operator mode while connecting the optional hard disk.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select the " [6] Password setting".
3	[Password setting mode Screen] Select "key operator password (4 digits)", "EKC master key code (8 digits)", "Weekly timer password (4 digits)" or "HDD management password (4 digits)".
4	Enter a new password using numeric keys.
5	Perform step 3 and 4 repeatedly to set other passwords.
6	Press the OK key to allow the passwords to take effect. To cancel the new passwords, press the CANCEL key. Pressing either key will display the Memory setting mode menu Screen again.

Reference1: The digits entered in the data field of each data item will be shifted to the left one after another.

Reference2: When the number of entered digits exceeds 4 or 8, the leftmost character will disappear.

Reference3: Setting the key operator password, weekly timer password, and HDD management password to "0000" allows you to use individual modes without passwords. That is, the menu screen of each mode appears directly without displaying the password input screen.

[11] Setting the Telephone Number and/or Fax Number of the Service Center

This function allows you to set the telephone number and/or fax number of the service center displayed when a service call occurs. The telephone number and/or fax number are/is also displayed as the basic help topic "Contact Number of Service Center" on the user screen. This function is not related to the RD mode; the telephone number and/or fax number are/is just displayed on the screen.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select the " [7] Telephone number/FAX number setting".
3	[Customer support TEL/FAX setting Screen] Select "Service center Telephone number (16 digits)" or "Service center Fax number (16 digits)".
4	Enter the telephone or fax number using numeric keys.
5	To set both telephone number and fax numbers, perform steps 3 and 4 repeatedly.
6	Press the OK key to allow the telephone number and/or fax number to take effect. To cancel the telephone number and/or fax number, press the CANCEL key. Pressing either key will display the Memory setting mode menu Screen again.

Reference1: If the length of a telephone or fax number is shorter than 16 digits, use a hyphen(s) to make the overall length 16 digits.

Reference2: The entered digits will be shifted to the left one after another, starting at the right end.

[12] Setting the Serial Number

This function allows you to display, set, or change the serial number of the main body or option.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select the " [8] Serial number setting".
3	[Serial number setting mode Screen] Press the key you want to change among the Main body , Option tray , or Finisher key.
4	Enter the serial number using alphabetic and numeric keys.
5	Perform steps 3 and 4 repeatedly to set other serial numbers.
6	Press the OK key to allow the serial numbers to take effect. To cancel the serial numbers, press the CANCEL key. Pressing either key will display the Memory setting mode menu Screen again.

Reference1: If the set serial number is invalid, a pop-up window appears to display a warning message. Press the **OK** key to close the pop-up window, then enter a valid serial number again.

Reference2: The entered characters will be shifted to the left one after another, starting at the right end.

[13] Displaying the ROM Version

This function allows you to display the versions of the installed ROMs.

Step	Operation
1	Enter the 25 mode.
2	[Memory setting mode menu Screen] Select the " [9] Indication of ROM version".
3	[Indication of ROM Version Screen] The versions of the ROMs installed in the Image control(I1 to I5), Printer control(C1 to C5), Finisher(N), and Punch(H) are displayed.
4	Press the RETURN key to return to the Memory setting mode menu Screen.

36 MODE

[1] Setting Method

This machine is provided with 36 Mode as an adjustment mode.

This mode is used to perform various adjustments.

1. Turn off SW2 (sub power).
2. Turn on SW2 while holding down both paper quantity buttons 3 and 6.

The Adjustment mode menu Screen appears.
At this point, you are in 36 mode and normal copy operation is disabled.

[Adjustment mode menu Screen]



3. Press the number key corresponding to the item to adjust.
The setting screen for each item is displayed.
4. Enter data in each adjustment screen.
5. If there are several adjustment items, press the **NEXT** or **BACK** key to select the desired item. If there are more screens below, press the key displayed on screen to change screen.
6. Enter data and press the **SET** key if it is available, to confirm your entry.
7. Press the **RETURN** key to end adjustment.
8. Turn off the SW2 and exit the 36 mode.
9. The new adjustment values take effect after restarting the machine.

[2] High Voltage Adjustment

Adjusting the high voltage for charging, transfer, separation, and development.

1. Select "① Process adjustment" in the Adjustment mode menu Screen to display the Process adjustment mode menu Screen.
2. Press "① High voltage adjustment" in the Process adjustment mode menu Screen to display the High voltage adjustment mode menu.
3. High voltage adjustment consists of the following:
 - ① HV adjustment (Charge)
 - ② HV adjustment (Transfer)
 - ③ HV adjustment (Separation AC)
 - ④ HV adjustment (Separation DC)
 - ⑤ HV adj. (Charging grid voltage)
 - ⑥ HV adj. (Bias of development)
 - ⑦ Transfer guide confirm
 - ⑧ HV adjustment (TGR)
4. Press the number key corresponding to the item to be adjusted.
The adjustment screen of the selected item is displayed.
5. When adjustment completes, the screen returns to the High voltage adjustment mode menu screen.
6. Press the **RETURN** key in the High voltage Adjustment mode menu Screen to return to the Process adjustment mode menu Screen.

ADJUSTMENT

1. Charging main manual adjustment

Charging main manual adjustment is inhibited in the field.

2. Transfer manual adjustment

Default setting value must be set under the guidance of Minolta Technical Support Center.

3. Separation (AC) manual adjustment

Default setting value must be set under the guidance of Minolta Technical Support Center.

4. Separation (DC) manual adjustment

Default setting value must be set under the guidance of Minolta Technical Support Center.

5. Charging grid manual adjustment

See [3] "Charging Grid Voltage Adjustment".

6. Developing bias manual adjustment

Default setting value must be set under the guidance of Minolta Technical Support Center.

7. Transfer guide confirm

Transfer guide confirm is inhibited in the field.

8. TGR manual adjustment

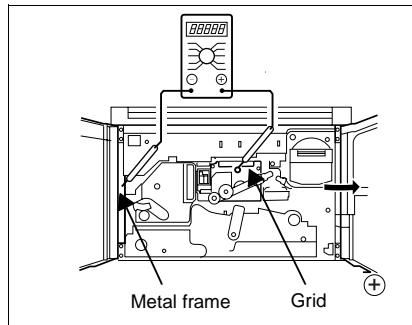
TGR manual adjustment is inhibited in the field.

[3] Charging Grid Voltage Adjustment

Adjusting the charging grid voltage. Before performing this adjustment, Check that the drum counter was reset.

8	When the voltage measured is not satisfactory, change the data using the numeric keys on the screen and press the SET key.
9	Turn the SW2 (sub power) OFF.

Standard value: Specified value on the drum flange ± 5 V
Range of input: 0 to 255
1 step: 1.6 V



Step	Operation
1	Check the adjustment value of the charging grid voltage on the drum flange.
2	Connect the V tester as shown below. +: Grid pin -: GND (Earth) Range: DC1000 V
3	Enter the 36 mode.
4	[Adjustment mode menu Screen] Press "① Process adjustment".
5	[Process adjustment mode menu Screen] Press "① High voltage adjustment".
6	[High voltage adjustment mode menu Screen] Press "⑤ HV adj. (Charging grid voltage)".
7	[HV adjustment (Charging grid voltage) Screen] Press START button , and check the voltage shown, then press CANCEL button.

[4] Drum Peculiarity Adjustment

Adjusting the blade set, maximum density (Dmax), dot diameter, laser offset and gamma.

1. Select "① Process adjustment" in the Adjustment mode menu Screen to display the Process adjustment mode menu Screen.
2. Press "② Drum peculiarity adjustment" in the Process adjustment mode menu Screen to display the Drum peculiarity adjustment mode menu Screen.
3. Drum Peculiarity Adjustment consists of the following:
 - ① Blade setting mode
 - ② Auto maximum density adj.
 - ③ Auto dot diameter adjustment
 - ④ LD1 offset adjustment
 - ⑤ LD2 offset adjustment
 - ⑥ LD1 bias adjustment
 - ⑦ LD2 bias adjustment
 - ⑧ Auto gamma adjustment (1 dot)
 - ⑨ Auto gamma adjustment (2 dot)
 - ⑩ Cartridge set mode
4. Press the number key corresponding to the item to be adjusted.
The adjustment screen of the selected item is displayed.
5. When adjustment completes, the screen returns to the Drum peculiarity adjustment mode menu Screen.
6. Press the [RETURN] key in the Drum peculiarity adjustment mode menu Screen to return to the Process adjustment mode menu Screen.

1. Blade setting mode

In this mode, toner stuck on the drum surface during replacement of the cleaning blade or drum is removed to prevent damage to the drum and cleaning blade.

Preparation: Be sure the drum unit is set.

Apply setting powder to all the surface of the drum.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "① Blade setting mode".
5	[Blade setting mode Screen] Press the Start key. Adjustment completes in about 1 second and a complete message is displayed.
6	Press the [RETURN] key to return to the Drum peculiarity adjustment mode menu Screen.

ADJUSTMENT

2. Auto maximum density adjustment (Dmax adjustment)

Automatically adjusting the maximum density (Dmax). This adjustment should be performed when the drum, developer, write unit, or dust-proof glass is replaced.

Preparation: Be sure the drum unit is set and developer is in the developing unit.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "② Auto maximum density adj.".
5	[Auto maximum density adjustment Screen] Press the Start key. The maximum density (Dmax) is adjusted automatically. Adjustment completes in about 15 seconds and a complete message is displayed.
6	Press the RETURN key to return to the Drum peculiarity adjustment mode menu Screen.

Reference:

If any one of the following error messages appears during auto maximum density adjustment, clean the TSCB (toner control sensor board), check its installation state, and retry the auto maximum density adjustment.

- <1> Error 1: The Dmax sensor dirt correction has been corrected.
- <2> Error 2: Maximum density adjustment is not complete when the number of rotation of developing sleeve reaches the specified value.
- <3> Error 3: No signal is output from the Dmax sensor. No control patch is output.

3. Auto dot diameter adjustment

Automatically adjusting the dot diameter.

This adjustment should be performed when the drum, developer, write unit, or dust-proof glass is replaced.

Preparation: Be sure the drum unit is set and developer is in the developing unit. Auto maximum density adjustment must have been completed.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "③ Auto dot diameter adjustment".
5	[Auto dot diameter adjustment Screen] Press the Start key. The dot diameter is adjusted automatically. Adjustment completes in about 10 seconds and a complete message is displayed.
6	Press the RETURN key to return to the Drum peculiarity adjustment mode menu Screen.

Reference:

If either of the following error messages appears during auto dot diameter adjustment, clean the TSCB (toner control sensor board), check its installation state, and retry the auto dot diameter adjustment.

- <1> Error 1: The γ sensor dirt correction has been corrected.
- <2> Error 2: Auto dot diameter adjustment has ended with an abnormal value.

4. LD1 offset adjustment

This adjusts the place at which LD1 laser starts writing.

This adjustment should be performed when the drum or developer is replaced. The adjustment is performed at line speed of 320, 280 and 185 respectively.

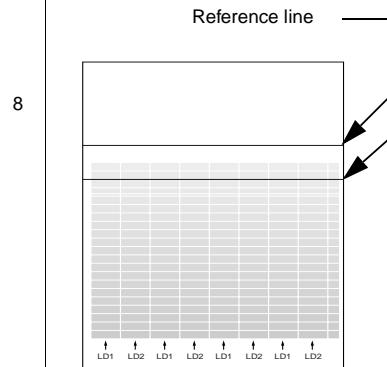
Be sure the drum unit is set.

Auto maximum density adjustment and auto dot diameter adjustment must have been completed.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "④ LD1 offset adjustment".
5	[LD1 offset adjustment Screen] Press any key of [LS320] , [LS280] , or [LS185] .
6	Press the [COPY SCREEN] key.
7	Select A3 size paper and press the START button to output the test pattern.

Check the test pattern.

Specification: Check if two output patterns from laser are consistent and the beginning of the lower density part is aligned between the two lines as illustrated below.



8

9 If the specification is not satisfied, press the C button while pressing the Utility button.

10 **[LD1 offset adjustment Screen]**
Enter an offset value using the numeric keys and press the **[SET]** key.
Setting range: -128 to +127

11 Repeat steps 6 to 10 until the specification is satisfied.

12 Press the **[RETURN]** key to return to the Drum peculiarity adjustment mode menu Screen.

Reference:

Select **[LS320]** to adjust in normal mode (line speed 320 mm/sec.), **[LS280]** to adjust in postcard mode (280 mm/sec.) (Japan only), or **[LS185]** to adjust in thick paper mode (185 mm/sec.).

5. LD2 offset adjustment

This adjusts the place at which LD2 laser starts writing.

This adjustment should be performed when the drum or developer is replaced. The adjustment is performed at line speed of 320, 280 and 185 respectively.

Be sure the drum unit is set.

Auto maximum density adjustment, auto dot diameter adjustment, and LD1 offset adjustment must have been completed.

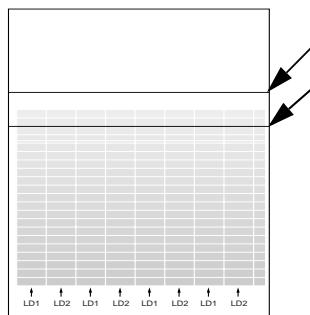
Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "⑤ LD2 offset adjustment".
5	[LD2 offset adjustment Screen] Press any key of [LS320], [LS280], or [LS185].
6	Press the [COPY SCREEN] key.
7	Select A3 size paper and press the START button to output the test pattern.

Check the test pattern.

Specification: Check if two output patterns from laser are consistent and the beginning of the lower density part is aligned between the two lines as illustrated below.

Reference line

8



9

If the specification is not satisfied, press the C button while pressing the Utility button.

10

[LD2 offset adjustment Screen]
Enter an offset value using the numeric keys and press the [SET] key.
Setting range: -128 to +127

11

Repeat steps 6 to 10 until the specification is satisfied.

12

Press the [RETURN] key to return to the Drum peculiarity adjustment mode menu Screen.

Reference:

Select [LS320] to adjust in normal mode (line speed 320 mm/sec.), [LS280] to adjust in postcard mode (280 mm/sec.) (Japan only), or [LS185] to adjust in thick paper mode (185 mm/sec.).

6. LD1 bias adjustment

LD1 bias adjustment is inhibited in the field.

7. LD1 bias adjustment

LD1 bias adjustment is inhibited in the field.

8. Auto gamma adjustment (1 dot)

Performs gamma adjustment (1 dot) automatically.

This adjustment should be performed when the drum, developer, write unit, or dust-proof glass is replaced.

Preparation: Be sure the drum unit is set.

Auto maximum density adjustment, auto dot diameter adjustment, LD1 offset adjustment and, LD2 offset adjustment must have been completed.

Reference:

If any one of the following error messages appears during auto gamma adjustment, clean the TSCB (toner control sensor board), check its installation state, and retry the auto gamma adjustment.

<1> Error 1: The γ sensor dirt correction has been corrected.

<2> Error 2: No signal is output from the γ sensor. No control patch is output.

<3> Error 3: A recurrence error occurred during γ curve calculation.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "⑧ Auto gamma adjustment (1 dot)".
5	[Auto gamma adjustment (1 dot) Screen] Press the Start key. The drum and developer operate to automatically adjust Gamma. Adjustment completes in about 10 seconds and a complete message is displayed.
6	Press the RETURN key to return to the Drum peculiarity adjustment mode menu Screen.

9. Auto gamma adjustment (2 dot)

Performs gamma adjustment (2 dot) automatically. This adjustment should be performed when the drum, developer, write unit, or dust-proof glass is replaced.

Preparation: Be sure the drum unit is set.

Auto maximum density adjustment, auto dot diameter adjustment, LD1 offset adjustment, LD2 offset adjustment, and auto gamma adjustment (1 dot) must have been completed.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "⑨ Auto gamma adjustment (2 dot)".
5	[Auto gamma adjustment (2 dot) Screen] Press the Start key. The drum and developer operate to automatically adjust Gamma. Adjustment completes in about 10 seconds and an complete message is displayed.
6	Press the RETURN key to return to the Drum peculiarity adjustment mode menu Screen.

10. Cartridge set mode

This adjustment should be performed when blank dots appears on the copy after the drum removing and installing.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Press "② Drum peculiarity adjustment".
4	[Drum peculiarity adjustment mode menu Screen] Press "⑩ Cartridge set mode".
5	[Cartridge set mode Screen] Press the Start key.
6	The developing unit and the drum rotate for two mintes, and return to Cartridge set mode Screen.
7	Press the COPY SCREEN key.
8	Select the wide paper (ie A3, A4, 11x17, 8.5x11) in the direction of the drum shaft, set 10 copies, and press START button.
9	If black dots still appear, press the C button while pressing the Utility button to return to the cartridge set mode, and repeat the step 5 to 8.
10	Press the C button while pressing Utility button when black dots disappear.
11	Press RETURN key to return to the Drum peculiarity adjustment mode menu Screen.

Reference:

If any one of the following error messages appears during auto gamma adjustment, clean the TSCB (toner control sensor board), check its installation state, and retry the auto gamma adjustment.

- <1> Error 1: The γ sensor dirt correction has been corrected.
- <2> Error 2: No signal is output from the γ sensor. No control patch is output.
- <3> Error 3: A recurrence error occurred during γ curve calculation.

[5] Drum Peculiarity Adjustment (Manual)

- 1. Maximum density manual adjustment**
This adjustment must be performed under the guidance of Minolta Technical Support Center.
Variable range: 0 to 41

2. Dot diameter manual adjustment

This adjustment must be performed under the guidance of Minolta Technical Support Center.
Variable range: 0 to 255

[6] User Paper Setting

This adjustment is only performed when the user uses special copy paper and can not be adjusted using the standard adjustment process.

This setting is applied when "User" is selected for "Paper type/Special size setting" in the key operator mode or when "User paper" is selected for "Transfer/separation output for plain paper" or "recycled paper" in 25 mode DIPSW.

The data for 64 g/m² plain paper" is input as the default.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Select "④ User paper setting".
4	Transfer/separation output screen appears. Enter data according to the user specified paper. Data should be input under the guidance of Minolta Technical Support Center.

[7] Recall Standard Data (Process Adjustment)

Restoring process adjustment settings to standard values (factory setting data).

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "① Process adjustment".
3	[Process adjustment mode menu Screen] Select "⑤ Recall standard data".
4	[Recall standard data Screen] Press the YES key. Various data is restored to standard values.
5	Press the RETURN key to return to the Process adjustment Screen.

[8] Tray Adjustment

This adjustment should be performed when the tray or by-pass unit is replaced.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Select "① Tray adjustment".
4	[Tray adjustment Screen] Press the NEXT or BACK key to select the tray to be adjusted. The screen changes from Tray 1 to Tray 2 to Tray 3 to By-pass tray 1 to By-pass tray 2. Using a scale, perform each adjustment individually, set the distance between (the inner surfaces of) the paper side guide plates of each tray to 210mm (A4R). Set the distance between (the inner surfaces of) the paper side guide plates of by-pass tray 1 to 210mm (A4R) and tray 2 to 280mm (8.5 × 11) respectively. Various data is restored to standard values.
5	Press the Start key. The selected tray is automatically adjusted. After adjustment completes, a message is displayed.
6	Press the RETURN key.

[9] Magnification Adjustment

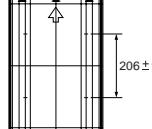
Adjusting the printer and copy vertical and horizontal magnifications.

1. Select "② Image adjustment" in the Adjustment mode menu Screen to display the Image adjustment mode menu Screen.
2. Press "② Magnification adjustment" in the Image adjustment mode menu Screen to display the Magnification adjustment mode menu Screen.
3. Magnification adjustment consists of the following:
 - ① Printer drum clock adjustment
 - ② Printer horizontal adjustment
 - ③ Scanner drum clock adjustment
 - ④ RADF drum clock adjustment
4. Press the number key corresponding to the item to be adjusted.
5. After adjustment completes, return to the Magnification adjustment menu Screen.
6. Press the [RETURN] key on the Magnification adjustment menu Screen to return to the Image adjustment mode menu Screen.

Caution: Check and adjust the printer vertical magnification adjustment during maintenance. Also adjust the printer restart timing because it changes with the printer vertical magnification adjustment

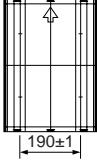
1. Printer drum clock magnification adjustment

Adjusting the printer vertical magnification.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Select "② Magnification adjustment".
4	[Magnification adjustment mode menu Screen] Press "① Printer drum clock adjustment".
5	[Printer drum clock adjustment Screen] Press the [COPY SCREEN] key.
6	Select A3 size paper and press the START button to output the test pattern (No.16).
7	Measure the vertical magnification with a ruler. Specification: $\pm 0.5\%$ or less (100 % magnification) Within ± 1 mm with respect to 206 mm. 
8	If the specification is not satisfied, press the C button while pressing the Utility button.
9	[Printer drum clock adjustment Screen] Enter a value using the numeric keys and press the [SET] key. Setting range: -27 to +100 1 step = 0.05 %
10	Repeat steps 5 to 9 until the specification is satisfied.
11	Press the [RETURN] key to return to the Magnification adjustment mode menu Screen.

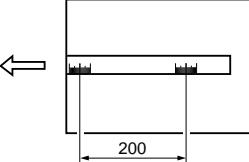
2. Printer horizontal magnification adjustment

Adjusting the horizontal magnification.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Select "② Magnification adjustment".
4	[Magnification adjustment mode menu Screen] Press "② Printer horizontal magnification adjustment".
5	[Printer horizontal adjustment Screen] Press the [COPY SCREEN] key.
6	Select A3 size paper and press the START button to output the test pattern (No.16).
7	Measure the horizontal magnification with a ruler. Specification: ± 0.5 % or less (100 % magnification) Within ± 1mm with respect to 190 mm. 
8	If the specification is not satisfied, press the C button while pressing the Utility button.
9	[Printer horizontal adjustment Screen] Enter a value using the numeric keys and press the [SET] key. Setting range: -10 to +10, 1 step = 0.1 %
10	Repeat steps 5 to 9 until the specification is satisfied.
11	Press the [RETURN] key to return to the Magnification adjustment mode menu Screen.

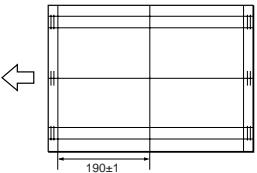
3. Scanner (platen) drum clock magnification adjustment

Adjusting the vertical magnification for the scanner.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Select "② Magnification adjustment".
4	[Magnification adjustment mode menu Screen] Press "③ Scanner drum clock adjustment".
5	[Scanner (Platen) drum clock adjustment Screen] Press the [COPY SCREEN] key.
6	Select A3 size paper, place a scale on the platen glass so that it runs parallel with the Original stopper plate rear, and press the START button.
7	Measure the vertical magnification with a ruler. Specification: ± 0.5 % or less (100 % magnification) Within ± 1 mm with respect to 200 mm. 
8	If the specification is not satisfied, press the C button while pressing the Utility button.
9	[Scanner (Platen) drum clock adjustment Screen] Enter a value with the numeric keys and press the [SET] key. Setting range: -40 to +40, 1 step = 0.05 %
10	Repeat steps 5 to 9 until the specification is satisfied.
11	Press the [RETURN] key to return to the Magnification adjustment mode menu Screen.

4. Scanner (RADF) drum clock magnification adjustment

Adjusting the vertical magnification during RADF copy.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Select "② Magnification adjustment".
4	[Magnification adjustment mode menu Screen] Press "④ RADF drum clock adjustment".
5	[RADF drum clock adjustment Screen] Press the NEXT or BACK key to select the magnification to be adjusted. The screen rotates from 100% to 50% to 200% to 400%.
6	Press the COPY SCREEN key.
7	Select A3 size paper, set an adjustment chart on RADF, and press the START button.
8	Measure the vertical magnification with a ruler. Specification: ± 0.5 % or less (100% magnification) Within ± 1 mm with respect to 190 mm. 
9	If the specification is not satisfied, press the C button while pressing the Utility button.
10	[RADF drum clock adjustment Screen] Enter a value with the numeric keys and press the SET key. Setting range: -40 to +40, 1 step = 0.05 %
11	Repeat steps 5 to 11 until the specification is satisfied.
12	Press the BACK key to return to the Magnification adjustment mode menu Screen.

[10] Timing Adjustment

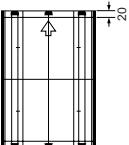
Adjusting the leading edge timing (paper feed restart timing), registration loop amount, and leading edge erasure amount.

1. Select ② Image adjustment in the Adjustment mode menu Screen to display the Image adjustment mode menu Screen.
2. Press "③ Timing adjustment" in the Image adjustment mode menu Screen to display the Timing adjustment mode menu Screen.
3. Timing adjustment consists of the following adjustments:
 - ① Printer restart timing adj.
 - ② Printer regist loop adjustment
 - ③ Printer pre-registration adjustment
 - ④ Printer lead edge timing adj.
 - ⑤ Scanner restart timing adj.
 - ⑥ RADF restart timing adjustment
 - ⑦ RADF regist loop adjustment
4. Press the number key corresponding to the item to be adjusted.
The adjustment screen of the selected item appears.
5. After adjustment completes, return to the Timing adjustment mode menu Screen.
6. Press the **RETURN** key in the Timing adjustment mode menu Screen to return to the Image adjustment mode menu Screen.

ADJUSTMENT

1. Printer restart timing adjustment

This adjusts the printer restart timing (paper feed timing). The adjustment is performed at line speed of 320, 280 and 185 respectively.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "① Printer restart timing adj".
5	[Printer restart timing adj. Screen] Press any key of [LS320] , [LS280] , or [LS185] .
6	Press the [COPY SCREEN] key.
7	Select A3-size paper and press the START button to output the test pattern (No.16).
8	Check the leading edge detection timing. Specification: 20 mm +1.0 mm 0mm 
9	If the specification is not satisfied, press the C button while pressing the Utility button.
10	[Printer restart timing adjustment Screen] Enter a value with the numeric keys and press the [SET] key. Setting range: -30 to +60 1 step=0.1mm
11	Repeat steps 5 to 10 until the specification is satisfied.
12	Press the [RETURN] key to return to the Timing adjustment mode menu Screen.

2. Printer registration loop adjustment

Adjusting the printer registration loop amount for trays (tray 1, 2 and 3), by-pass tray, and ADU.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "② Printer regist loop adjustment".
5	[Printer regist loop adj Screen] Press the [NEXT] or [BACK] key to select the item to be adjusted. The screen changes from Tray to By-pass tray to ADU.
6	Press the [COPY SCREEN] key.
7	Press the START button to make a copy.
8	Check the printer registration loop amount.
9	If the printer registration loop amount is not appropriate, press the C button while pressing the Utility button.
10	[Printer regist loop adj. Screen] Enter a value with the numeric keys and press the [SET] key. <ul style="list-style-type: none">• Tray (tray 1, 2, 3 and LCT) Setting range: -5 to +5 1 step = 2 ms• By-pass tray Setting range: -10 to +10 1 step = 2 ms• ADU Setting range: -10 to +10 1 step = 2 ms
11	Repeat steps 5 to 10 until the printer registration loop amount is appropriate.
12	Press the [RETURN] key to return to the Timing adjustment mode menu Screen.

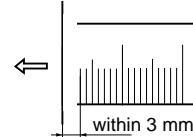
3. Printer pre-registration amount adjustment

Adjusting the pre-registration loop amount for trays 1, 2, 3, LCT and ADU.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "③ Printer pre-registration adjustment".
5	[Printer pre-regist adj. Screen] Press the [NEXT] or [BACK] key to select the item to be adjusted. The screen changes from Tray 1 to Tray 2 to Tray 3 to LCT to ADU.
6	Press the [COPY SCREEN] key.
7	Press the START button to make a copy.
8	Check the printer pre-registration loop amount.
9	If the printer pre-registration loop amount is not appropriate, press the C button while pressing the Utility button.
10	[Printer pre-regist adj. Screen] Enter a value with the numeric keys and press the [SET] key. <ul style="list-style-type: none"> • Tray (tray 1, 2, 3 and LCT Setting range: -5 to +5 1 step = 2 ms) • ADU Setting range: -10 to +10 1 step = 2 ms
11	Repeat steps 5 to 10 until the printer pre-registration loop amount is appropriate.
12	Press the [RETURN] key to return to the Timing adjustment mode menu Screen.

4. Printer leading edge timing adjustment

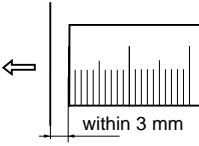
Adjusting the printer leading edge timing (image erasure amount).

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "④ Printer lead edge timing adjustment".
5	[Printer lead edge timing adjustment Screen] Press the [COPY SCREEN] key.
6	Select A3 size paper, place a scale on the platen glass so that its leading edge is aligned with the original stopper plate left, and press the START button.
7	Check the printer leading edge erasure amount. Specification: Within 3mm 
8	If the printer leading edge erasure amount is not appropriate, press the C button while pressing the Utility button.
9	[Printer lead edge timing adjustment Screen] Enter a value with the numeric keys and press the [SET] key. Setting range: -20 to +40 1 step = 0.1 mm
10	Repeat steps 5 to 10 until the printer leading edge erasure amount is within specification.
11	Press the [RETURN] key to return to the Timing adjustment mode menu Screen.

5. Scanner (platen) restart timing adjustment

Adjusting the scanner restart timing during platen copy.

Caution: Printer restart timing adjustment must be completed before performing this adjustment.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "⑤ Scanner restart timing adj.".
5	[Scanner (platen) restart timing adj. Screen] Press the [COPY SCREEN] key.
6	Select A3-size paper, place a scale on the platen glass so that its leading edge is aligned with the original stopper plate left, and press the START button.
7	Check the restart timing. Specification: Within 3 mm 
8	If the leading edge timing is not appropriate, press the C button while pressing the Utility button.
9	[Scanner (platen) restart timing adj. Screen] Enter a value with the numeric keys and press the [SET] key. Setting range: -60 to +20 1 step = 0.1 mm
10	Repeat steps 5 to 10 until the leading edge timing is within specification.
11	Press the [RETURN] key to return to the Timing adjustment mode menu Screen.

6. RADF restart timing adjustment

Adjusting the scanner leading edge timing during RADF copy.

Caution: Printer restart timing adjustment must be completed before performing this adjustment.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "⑥ RADF restart timing adj.".
5	[RADF restart timing adj. Screen] Press the [COPY SCREEN] key and then switch to double sided /single sided copy mode.
6	Select A3 size paper, set an adjustment chart on RADF, and press the START button.
7	Check the leading edge timing on front and back side. Specification: Within 3 mm
8	If the restart timing is not appropriate, press the C button while pressing the Utility button.
9	[RADF restart timing adj. Screen] Press the [NEXT] or [BACK] key to select the item to be adjusted. The screen changes from single side to double-side (front), to double side (back) copy.
10	Enter a value with the numeric keys and press the [SET] key. Setting range: -60 to +50 1 step = 0.1 mm
11	Repeat steps 5 to 10 until the leading edge timing is within specification.
12	Press the [RETURN] key to return to the Timing adjustment mode menu Screen.

7. RADF registration loop amount adjustment

Adjusting the registration loop amount during RADF copy.

Caution: Printer restart timing adjustment must be completed before performing this adjustment.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "③ Timing adjustment".
4	[Timing adjustment mode menu Screen] Press "⑦ RADF regist loop adjustment".
5	[RADF regist loop adjustment Screen] Press the COPY SCREEN key and then switch to double-sided / single-sided copy mode.
6	Select A3 size paper, set an adjustment chart on RADF, and press the START button.
7	Check the loop amounts on the front and back side.
8	If the registration loop amount is not appropriate, press the C button while pressing the Utility button.
9	[RADF regist loop adjustment Screen] Press the NEXT or BACK key to select the item to be adjusted. The screen changes from single sided to double sided (front) to double sided (back), to double sided pre-registration.
10	Enter a value with the numeric keys and press the SET key. Setting range: -10 to +10 1 step=0.5mm
11	Repeat steps 5 to 11 until the registration loop amount is within specification.
12	Press the RETURN key to return to the Timing adjustment mode menu screen.

[11] RADF Adjustment

Performing RADF density adjustment, RADF original size adjustment and RADF skew offset adjustment.

1. Select ② Image adjustment in the Adjustment mode menu Screen to display the Image adjustment mode menu Screen.
2. Press ④ RADF adjustment in the Image adjustment mode menu Screen and display the RADF adjustment mode menu Screen.
3. RADF adjustment consists of the following items:
 - ① RADF density adjustment
 - ② RADF original size adjustment
 - ③ RADF Incline offset adjustment
4. Press the number key corresponding to the item to be adjusted.
The adjustment screen of the selected item appears.
5. After adjustment completes, return to the RADF adjustment mode menu Screen.
6. Press the **RETURN** key in the RADF adjustment mode menu Screen to return to the Image adjustment mode menu Screen.

1. RADF density adjustment

When the original reader slit glass is replaced, the density when reading originals with the RADF must be adjusted.

Preparation: Wipe the original reader slit glass clean. Check that the white chart is not dirty or folded.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "④ RADF adjustment".
4	[RADF adjustment mode menu Screen] Press "① RADF density adjustment".
5	[RADF density adjustment Screen] Set white chart on RADF (Caution 1).
6	Press the [Start] key. RADF density is adjusted automatically. When adjustment completes, a message appears on the screen.
7	If an error message is displayed, repeat steps 5 and 6 (Caution 2).
8	Press the [RETURN] key to return to the RADF adjustment mode menu Screen.

Caution1: Be sure to set the white chart in A4 orientation.

Caution2: If the error message appears repeatedly, there is a possibility of scanner system mechanical, optical, or electrical adjustment error or parts defect.

2. RADF original size adjustment

Perform this adjustment when the RADF original size detection does not operate properly.

Caution: RADF original size adjustment consists of A4 and B6R. Use the **[NEXT]** or **[BACK]** key to select the desired adjustment item.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "④ RADF adjustment".
4	[RADF adjustment mode menu Screen] Press "② RADF original size adjustment".
5	[RADF original size adj. Screen] Press the [NEXT] or [BACK] key to select original size to adjust. The screen changes between A4 to A5R.
6	Set the original of the selected size on RADF and press the [Start] key. RADF original size is adjusted automatically.
7	Repeat steps 5 and 6 and adjust both sizes.
8	Press the [RETURN] key to return to the RADF adjustment mode menu Screen.

3. RADF incline offset adjustment

Adjusting the standard value of the distortion adjustment (Copier).

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "④ RADF adjustment".
4	[RADF adjustment mode menu Screen] Press "③ RADF Incline offset adjustment".
5	[RADF Incline offset adjustment Screen] Press the [COPY SCREEN] key.
6	Select A3 size paper, set an adjustment chart on RADF, and press the START button.
7	Check the RADF skew offset amount. Specification: 0.5 %
8	If the RADF incline offset amount is not appropriate, press the C button while pressing the Utility button.
9	[RADF Incline offset adjustment Screen] Enter a value with the numeric keys and press the [SET] key. Setting range: -60 to +60 1 step = 0.05 %
10	If the RADF skew offset amount is not within specification, repeat steps 5 to 9.
11	Press the [RETURN] key to return to the RADF adjustment mode menu Screen.

[12] Centring Adjustment

Perform this adjustment to centre the image in a direction perpendicular to the paper feed direction.

1. Select "② Image adjustment" in the Adjustment mode menu Screen to display the Image adjustment mode menu Screen.
2. Press "⑤ Centring adjustment" in the Image adjustment mode menu Screen to display the Centring adjustment menu screen.
3. Centring adjustment consists of the following:
 - ① Printer centring adjustment
 - ② Scanner centring adjustment
 - ③ RADF centring adjustment
4. Press the number key corresponding to the item to be adjusted.
The adjustment screen of the selected item appears.
5. After adjustment completes, return to the Centring adjustment menu Screen.
6. Press the **[RETURN]** key in the Centring adjustment menu screen to return to the Image adjustment mode menu Screen.

1. Printer Centring Adjustment

Adjusting the printer centring.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "⑤ Centring adjustment".
4	[Centring adjustment mode menu Screen] Press "① Printer centring adjustment".
5	[Printer centring adjustment Screen] Press the COPY SCREEN key.
6	Select A3-size paper and press the START button to output the test pattern (No.16).
7	Fold A3 size paper in half in the short edge (landscape) orientation and check whether the lines on the left and right overlap completely. Specification: ± 1 mm or less
8	If the printed image is not appropriate, press the C button while pressing the Utility button.
9	[Printer centring adjustment Screen] Enter a value with the numeric keys and press the SET key. Setting range: -64 to +63 1 step = 0.1 mm
10	Repeat steps 5 to 9 until the offset is within specification.
11	Press the RETURN key to return to the Centring adjustment mode menu Screen.

2. Scanner (platen) centring adjustment

Adjusting the scanner (platen) centring.

Preparation: Printer centring adjustment must be completed before performing this adjustment.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "⑤ Centring adjustment".
4	[Centring adjustment mode menu Screen] Press "② Scanner centring adjustment".
5	[Scanner (Platen) centring adjustment Screen] Press the COPY SCREEN key.
6	Select A3-size paper, set a test chart GTC-003 or 004 on the original glass, and press the START button.
7	Fold A3 size paper in half in the short edge (landscape) orientation and check whether the lines on the left and right overlap completely. Specification: ± 2 mm
8	If the offset is not within specification, press the C button while pressing the Utility button.
9	[Scanner (Platen) centring adjustment Screen] Enter a value with the numeric keys and press the SET key. Setting range: -30 to +30 1 step = 0.1 mm
10	Repeat steps 5 to 9 until the offset is within specification.
11	Press the RETURN key to return to the Centring adjustment mode menu Screen.

3. RADF centring adjustment

This adjusts centring for the RADF copy.
There are six adjustment items as follows:

- Single sided small size
- Double sided (front) small size
- Double sided (back) small size
- Single sided large size
- Double sided (front) large size
- Double sided (back) large size

	12 Press the [RETURN] key to return to the Centring adjustment mode menu Screen.
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Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "⑤ Centring adjustment".
4	[Centring adjustment mode menu Screen] Press "③ RADF centring adjustment".
5	[RADF centring adj. Screen] Press the [COPY SCREEN] key and enter double sided / single sided copy mode.
6	Load A3 size paper in the tray, place small size or large size original on RADF, and press the START button.
7	Fold A3 size paper in half in the short edge (landscape) orientation and check whether the lines on the left and right overlap completely. Specification: ± 1 mm
8	If the offset is not within specification, press the C button while pressing the Utility button.
9	[RADF centring adj. Screen] Press the [NEXT] or [BACK] key to select the item to be adjusted.
10	The screen changes from single sided small size to double sided (front) small size to double sided (back) small size to single sided large size to double sided (front) large size to double sided (back) large size. Enter a value with the numeric keys and press the [SET] key. Setting range: -30 to +30 1 step = 0.1 mm
11	Repeat steps 5 to 10 until the centering is within specification.

[13] Distortion adjustment (Copier)

This is to correct distortion during platen/RADF copying. There are four adjustment items as follows:

- Scanner (platen) distortion (main scan)
- Scanner (platen) distortion (sub-scan)
- Scanner (RADF) distortion (main scan)
- Scanner (RADF) distortion (sub-scan)

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Press "⑥ Warp adjustment (Copier)".
4	[Scanner warp adj. Screen] Press the COPY SCREEN key.
5	Select A3 size paper. To check the platen, set an adjustment chart on the original glass. To check RADF, set it on RADF.
6	Check for platen copy distortion or RADF copy distortion. Specification: The difference in lengths of two diagonals of a 200 mm square must be within 1.4 mm.
7	If the platen copy distortion or RADF copy distortion is not within specification, press the Utility button while pressing the Utility button.
8	[Scanner warp Adj. Screen] Press the NEXT or BACK key to select the desired adjustment item.
9	Enter a value with the numeric keys and press the SET key. Range of setting: -50 to +50 1 step = 0.05 %
10	Repeat steps 6 to 9 until the distortion is within specification.
11	Press the RETURN key to return to the Image adjustment mode menu Screen.

[14] Non-image area erase check

When this machine is installed in a place or is moved to another location, research should be conducted on the conditions under which the machine is placed.

Preparation: RADF must be opened.

Nothing should be put on the original glass. The original glass must be clean and transparent.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "② Image adjustment".
3	[Image adjustment mode menu Screen] Select "⑦ Non-image area erase check".
4	[Non-image area erase check Screen] Open the RADF, and press the Start key.
5	Confirm that a message indicating that it operated normally is displayed in the message display. When a message indicating it did not operate properly is displayed, refer to Reference 1 shown below. Then, perform the non-original automatic erasure installation research again.

Reference 1:

Here are measures to be taken when the following error messages are indicated.

<Error message 1>

Adjust for Extreme Brightness. In many cases, the Non-image-area-erase function will not operate correctly. Please confirm "adjustment" - "36 mode" columns of the Service Hand book.

<Countermeasure1>

If you use the non-original erasure function, or copy originals that have a dark background using the non-original erasure method, relatively infrequently, use the machine in its present installation environment.

If, however, you copy originals that have a dark background fairly frequently, re-install the machine in a dark location and facing a direction such that external light does not get into it, then carry out the installation survey once again.

<Error message2>

A datum with potential not to function non-image-area-erase is found.

Please confirm "adjustment" - "36 mode" columns of the Service Hand book.

<Countermeasure2>

If you use the non-original erasure function relatively infrequently, you can use the machine in its present installation environment.

If, however, you copy originals that have a dark background fairly frequently, re-install the machine in a dark location and facing a direction such that external light does not get into it, then carry out the installation survey once again. In this case, if there is a bright light source, such as a fluorescent light, directly above the machine, reconsider the installation location and direction, or take steps to block off the light from the light source (by using a cover, for example), then carry out the installation survey once again.

[15] Recall standard data (Image adjustment)

Restoring image adjustment settings to standard values (factory setting data).

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press " [2] Image adjustment".
3	[Image adjustment mode menu Screen] Select " [8] Recall standard data".
4	[Recall standard data Screen] Press the [YES] key. Various data is restored to standard values.
5	Press the [RETURN] key to return to the Image adjustment mode menu Screen.

[16] Running Test Mode

Testing continuous copy operation.

Select “③ Running test mode” in the Adjustment mode menu Screen.

This adjustment consists of the following items:

① Intermittent copy mode

In this mode, the machine goes into the copy ready state after completing a set number of copy operations, waits 0.5 sec, and then repeats the same operation.

② Paperless running mode

In this mode, the machine goes into the copy ready state after completing a set number of copy operations without performing paper detection or jam detection, waits 0.5 sec, and then repeats the same operation.

③ Paperless mode

In this mode, the machine makes a set number of copies at approximately the same timing as for normal copy without performing paper detection or jam detection.

④ Paperless endless mode

In this mode, the machine makes copies at approximately the same timing as for normal copy without performing paper detection or jam detection. The copy quantity is set to infinity automatically.

⑤ Running mode

This mode consists of Paperless mode with repetitive scanner scan and auto paper feed tray change.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press “③ Running test mode”.
3	[Running test mode menu Screen] Press mode keys ① to ⑤.
4	[Copy Screen] Press the START button.
5	Check the copy operation and then press the STOP button to stop.
6	Turn the SW2 (sub power) OFF.

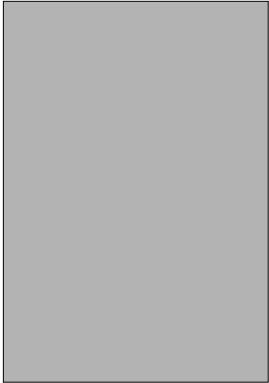
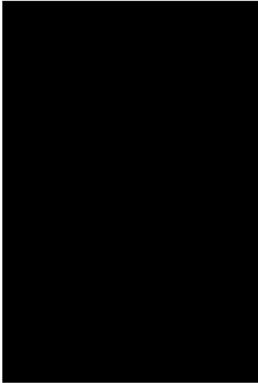
[17] Test pattern output mode

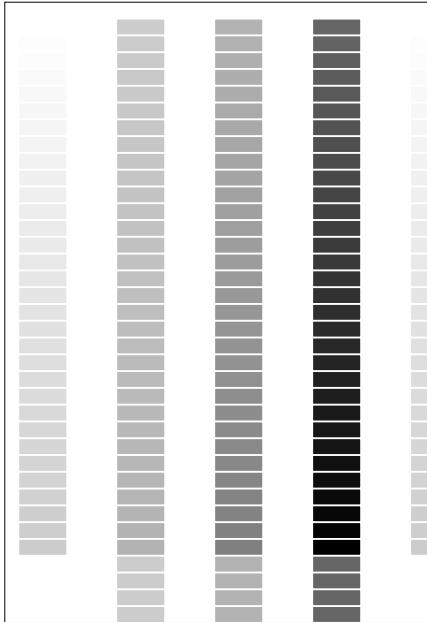
Output test pattern.

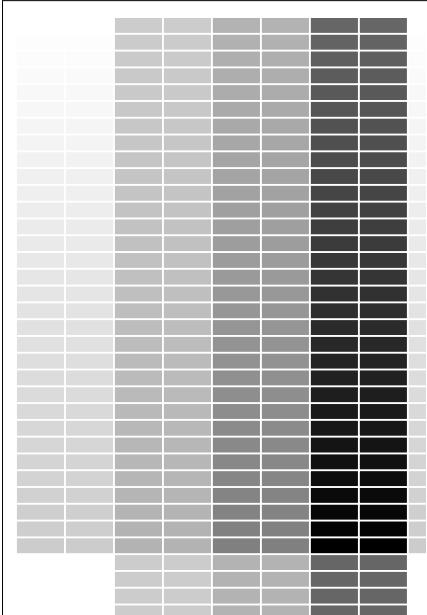
Select “④ Test pattern output mode” in the Adjustment mode menu Screen to display the Test pattern output mode screen.

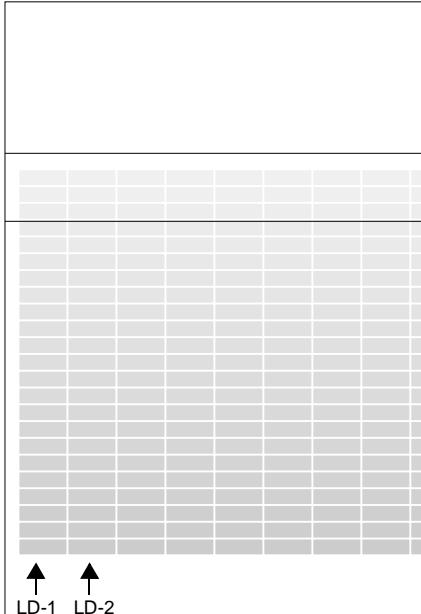
Caution: Do not touch any mode that is not specifically described.

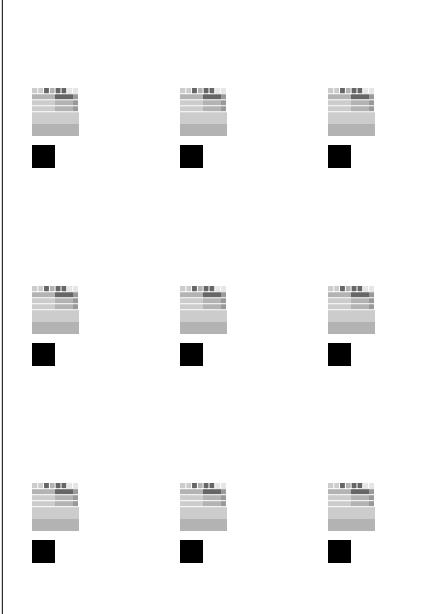
Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press “④ Test pattern output mode”.
3	[Test pattern output mode Screen] Use the numeric keys to enter the number of the test pattern to output and press the SET key.
4	Press the COPY SCREEN key.
5	[Copy Screen] Select A3 size paper and press the START button to output the test pattern.
6	To output another test pattern, press the C button while pressing the Utility button and repeat steps 3 to 5.
7	Press the RETURN key to end.

No.1	Overall halftone
Check item	
<ul style="list-style-type: none">● When density is set to 70 (halftone) If there are white stripes, black stripes, or uneven density, determine whether the fault is with the scanner or the printer.● When density is set to 0 (white) If the test pattern is gray background, determine whether the fault is with the scanner or the printer.● When density is set to 255 (black) If the density is light, determine whether the fault is with the scanner or the printer. <p>* The above density settings are typical values. See [18] "Test pattern density setting" for more information on density setting.</p>	
Test patterns	
Density set to 70	Density set to 0
	
Density set to 255	
	

No.2	Gradation pattern
<p>Check item</p> <p>If the test pattern is gray background or the density is light, determine whether the fault is with the processing system or with γ correction. If the copy image is abnormal despite this test pattern being normal, either the image processing system or the scanner system is abnormal.</p>	
<p>Test patterns</p> 	

No.3	Gradation pattern
<p>Check item</p> <p>If the test pattern is abnormal, check whether the two lasers are emitting light normally.</p>	
<p>Test patterns</p> 	

No.5	Gradation pattern
<p>Check item</p> <p>If the test pattern is abnormal, check whether the two laser outputs are uniform.</p>	
<p>Test patterns</p> 	

No.11	Beam misalignment check
<p>Check item</p> <p>If the test pattern is abnormal, check to see if position correction of the two laser beams is normal.</p>	
<p>Test patterns</p> 	

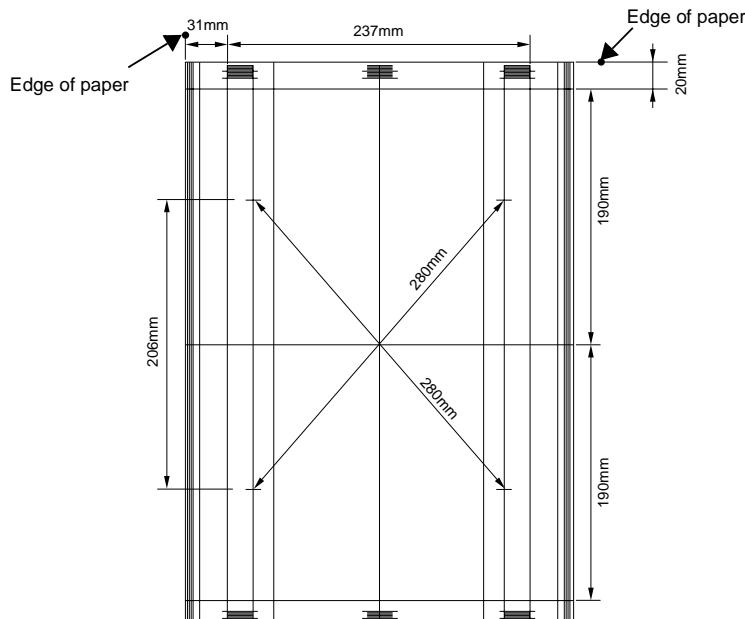
No.16 Linearity evaluation pattern

Check item

Use this check pattern to determine whether the fault is with the scanner or the printer. The printer horizontal magnification, vertical magnification, tilt, and leading edge timing and etc, can be checked. If the copy image is defective despite no abnormality in the test pattern, the scanner is at fault.

Note:

Loss of the image occurs in test pattern when printing on paper other than A3 paper.

Test patterns : Sample of A3 paper output

[18] Test pattern density setting

Setting the test pattern density.

Select “**[5] Test pattern density setting**” in the Adjustment mode menu Screen to display the Test pattern density setting Screen.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press “ [5] Test pattern density setting ”.
3	[Test pattern density Screen] Use the numeric keys to enter the number of the test pattern to output and press the [SET] key. Setting range: 0 to 255
4	Press the [COPY SCREEN] key.
5	Press the START button to output a test pattern.
6	To output another test pattern, press the C button while pressing the Utility button and repeat steps 3 to 5.
7	Press the [RETURN] key to end.

[19] Finisher adjustment

Adjusting the finisher, cover sheet tray, and puncher.

1. Select “**[6] Finisher adjustment**” on the Adjustment mode menu Screen to display the Finisher adjustment mode menu Screen.
2. Finisher adjustment items are as follows:
 - [1] Stitch & Fold stopper adj.**
 - [2] Fold stopper adjustment**
 - [3] Cover sheet tray size adj.**
 - [5] Punch adjustment**
 - [6] Z-fold position adjustment**
 - [7] Three-Fold position adj.**
 - [8] 2 positions staple pitch adj.**
3. Press the number key corresponding to the item to be adjusted.
4. The adjustment screen for the selected adjustment item appears.
5. After adjustment completes, return to the Finisher adjustment mode menu Screen.
6. Press the **[RETURN]** key of the Finisher adjustment menu to return to the Adjustment mode menu Screen.

1. Stitch and fold stopper adjustment (FN-6 only)

Adjusting the stapling position when stitch and fold mode.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press " [6] Finisher adjustment".
3	[Finisher adjustment mode menu Screen] Press " [1] Stitch and fold stopper adj.".
4	[Stitch and Fold stopper adj. Screen] Press the COPY SCREEN key.
5	Set paper in the tray, set originals on RADF, and press the START button.
6	Check the paper center and stapling position. Specification: $\pm 1\text{mm}$
7	If the stapling position is not within specification, press the C button while pressing the Utility button.
8	[Stitch and Fold stopper adj. Screen] Press the NEXT or BACK key to select a desired paper size.
9	Enter a value with numeric keys and press the SET key. Setting range: -128 to +127 1 step = 0.1 mm
10	Repeat steps 4-9 until the stapling position is within specification.
11	Press the RETURN key to return to the Finisher adjustment mode menu Screen.

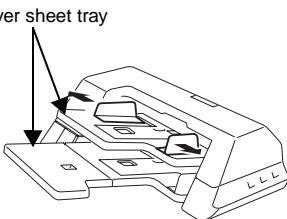
2. Folding stopper adjustment (FN-6 only)

Adjusting the folding position when stitch and fold or folding mode.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press " [6] Finisher adjustment".
3	[Finisher adjustment mode menu Screen] Press " [2] Fold stopper adjustment".
4	[Fold stopper adjustment Screen] Press the COPY SCREEN key.
5	Set paper in the tray, set originals on RADF, and press the START button.
6	Check the paper center and folding position. Specification: $\pm 1\text{mm}$
7	If the folding position is not within specification, press the C button while pressing the Utility button.
8	[Fold stopper adjustment Screen] Press the NEXT or BACK key to select a desired paper size.
9	Enter a value with numeric keys and press the SET key. Setting range: -128 to +127 1 step = 0.1 mm
10	Repeat steps 4-9 until the folding position is within specification.
11	Press the RETURN key to return to the Finisher adjustment mode menu Screen.

3. Cover sheet tray size adjustment (Cover Inserter B only)

This adjustment should be performed when the cover sheet tray size cannot be detected properly and when centring adjustment for cover sheet tray is performed.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "⑥ Finisher adjustment".
3	[Finisher adjustment mode menu Screen] Press "③ Cover sheet tray size adjustment".
4	[Cover sheet tray size adj. Screen] Press [NEXT] or [BACK] key to select the tray to be adjusted.
5	Set a A4R size paper on the cover sheet tray (upper/lower), press the [Start] key on the LCD. A complete message appears on the screen. 
6	Press the [RETURN] key to return to the Finisher adjustment mode menu Screen.

4. Punch adjustment (PK-2, PK-5, ZK-2)

This performs the punch horizontal positions and adjusts punch registration loop amount.

- Select "⑤ Punch adjustment" on the Finisher adjustment mode menu Screen to display the Punch adjustment menu Screen.
- Punch adjustment includes the following items:
 - ① Punch kit vertical position adjustment (PK-5)
 - ② Punch kit horizontal position adjustment (PK-2, PK-5)
 - ③ Punch unit vertical position adjustment (ZK-2)
 - ④ Punch unit horizontal position adjustment (ZK-2)
 - ⑤ Punch regist loop adjustment (PK-2, PK-5, ZK-2)
- Press the number key corresponding to the item to be adjusted. The adjustment screen for the selected adjustment item appears.
- After adjustment completes, return to the Punch adjustment menu Screen.
- Press the [RETURN] key of the Punch adjustment menu to return to the Finisher adjustment mode menu Screen.

ADJUSTMENT

(1) Punch vertical position adjustment (PK-5, ZK-2)

Adjusting the punch horizontal position.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "⑥ Finisher adjustment".
3	[Finisher adjustment mode menu Screen] Press "⑤ Punch adjustment".
4	[Punch adjustment menu Screen] Press "① Punch kit vertical position adj." or "③ Punch unit vertical position adj."
5	[Punch vertical position adj.] Press the [COPY SCREEN] key.
6	Set papers in the tray, place the original on RADF, and press the START button.
7	Check the punch vertical position.
8	If the punch vertical position is not appropriate, press the C button while pressing down the Utility button.
9	[Punch vertical position adj. Screen] Press the [NEXT] or [BACK] key to select a desired paper size.
10	Enter a value with numeric keys and press the [SET] key. Setting range: -50 to +50 1 step = 0.1 mm
11	Repeat steps 5-10 until the punched position is within the specification.
12	Press the [RETURN] key to return to the Punch adjustment menu Screen.

(2) Punch horizontal position adjustment (PK-2, PK-5, ZK-2)

Adjusting the punch horizontal position.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "⑥ Finisher adjustment".
3	[Finisher adjustment mode menu Screen] Press "⑤ Punch adjustment".
4	[Punch adjustment menu Screen] Press "② Punch kit horizontal position adj." or "④ Punch unit horizontal position adj."
5	[Punch Horizontal position adj.] Press the [COPY SCREEN] key.
6	Load papers in the tray, place the original on RADF, and then press the START button.
7	Check the paper center and the position of punch holes. Specification (Length between the edge of paper and the center of punch hole): 10.5 mm (2 holes/4 holes), 9.5 mm (3 holes)
8	If the punch horizontal position is not appropriate, press the C button while pressing down the Utility button.
9	[Punch Horizontal position adj. Screen] Press the [NEXT] or [BACK] key to select a desired paper size.
10	Enter a value with numeric keys and press the [SET] key. Setting range: -50 to +50 1 step = 0.1 mm
11	Repeat steps 5-10 until the punched position is within the specification.
12	Press the [RETURN] key to return to the Punch adjustment menu Screen.

(3) Punch registration loop adjustment (PK-2, PK-5, ZK-2)

Adjusting the registration loop amount for the reversed paper exit, the ADU paper exit (straight exit) and cover sheet upper/lower..

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "⑥ Finisher adjustment".
3	[Finisher adjustment mode menu Screen] Press "⑤ Punch adjustment".
4	[Punch adjustment mode Screen] Press "⑤ Punch regist loop adjustment".
5	Press "① Punch registration loop adj.(main body)" or "② Punch regist loop adj.(PI)".
6	[Punch Regist Loop adj. Screen] Press the [NEXT] or [BACK] key to select the item to be adjusted. The screen changes as follows; Reverse Paper eject → ADU Paper eject or Cover sheet Upper → Cover sheet Lower.
7	Press the [COPY SCREEN] key.
8	Press the START button to make a copy.
9	Check the punch registration loop amount.
10	If the punch registration loop amount is not appropriate, press the C button while pressing the Utility button.
11	[Punch Regist Loop Adj. Screen] Enter a value with numeric keys and press the [SET] key. Setting range: -20 to +20 1 step = 0.8 mm
12	Repeat steps 6-11 until the punch registration loop amount is within the specification.
13	Press the [RETURN] key to return to the Punch adjustment menu Screen.

4. Z-folding position adjustment (ZK-2)

Adjusting the positions for the Z-foldings performed.

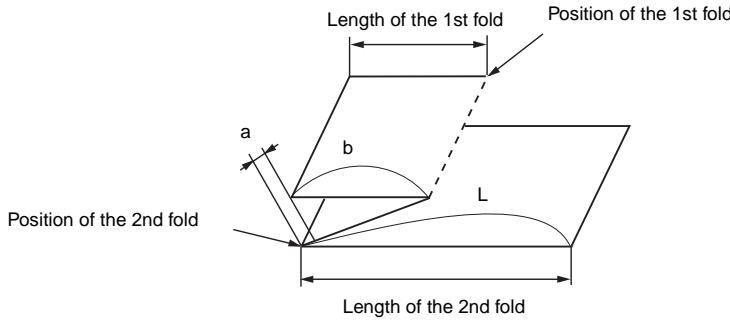
Step	Operation
1	Set to 36 mode.
2	[36 mode menu] Press ⑥ Finisher adjustment.
3	[Finisher adjustment mode menu] Press ⑥ Z-folding position adjustment.
4	[Z-folding position adjustment mode menu] Press ① 1st Z-folding position adjustment menu.
5	[1st Z-folding position adjustment] Press the [NEXT] or [BACK] key to select appropriate size.
6	Use the numeric keys to enter a numerical value, then press the [SET] key. Setting range: -128 to +127 1 step = 0.1 mm
7	Press the [COPY SCREEN] key to return to the Copy screen, and make a copy.
8	Confirm the position of the 1st fold.
9	If the 1st folding position is not properly set, press the C button while holding down the Utility key to return to the adjustment screen.
10	Repeat steps 6 to 9 until the 1st folding position is correctly set.
11	Press the [RETURN] key of the adjustment screen to return to the Z-folding position adjustment screen
12	[Z-folding position adjustment screen] Press ② 2nd Z-holding position adjustment menu.
13	[2nd Z-folding position adjustment screen] Press the [NEXT] or [BACK] key to select appropriate size.

14	Use the numeric keys to enter a numerical value, then press the [SET] key. Setting range: -128 to +127 1 step = 0.1 mm
15	Press the [COPY SCREEN] key to return to the Copy screen, and make a copy.
16	Confirm the position of the 2nd fold.
17	If the 2nd folding position is not properly set, press the C button while holding down the Utility key to return to the adjustment screen.
18	Repeat steps 13 to 17 until the 2nd folding position is correctly set.

5. Z-folding adjustment value

Unit (mm)

	Deviance on edge (a)	Length of 1st fold (b)	Length of 2nd fold (L) adjustment value	Length of 2nd fold (L) standard value
11 x 17	3.5 ±1.5	(108)	212	Less than 215
A3	3.5 ±1.5	(105)	206	Less than 209
8K	3.5 ±1.5	(97)	191	Less than 194
B4	3.5 ±1.5	(91)	178	Less than 181
8.5 x 14	-	-	258.6	Less than 261.6

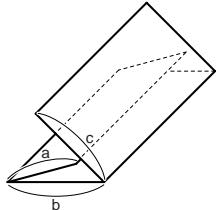


Note:

- Length of the 1st fold is for standard
- The length of the 2nd fold should be the adjustment value.

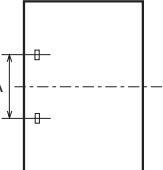
5. Three-folding adjustment (FN-6 only)

Adjusting the folding positions during the three-folded copy.

Step	Operation									
1	Enter the 36 mode.									
2	[Adjustment mode menu Screen] Press "⑥ Finisher adjustment".									
3	[Finisher Adjustment mode Menu Screen] Press "⑦ Three-held positions adjustment".									
4	[Three-Folding adjustment Screen] Press the COPY SCREEN key.									
5	Load papers in the tray, place the original on RADF, and then press the START button.									
6	Check the three-held positions of paper. 									
	<table border="1"> <thead> <tr> <th>Folded positions</th> <th>Reference value</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td>A4R</td> <td>8.5x11R</td> <td></td> </tr> <tr> <td>a</td> <td>93 mm</td> <td>86.4 mm ± 2 mm</td> </tr> </tbody> </table>	Folded positions	Reference value	Specification	A4R	8.5x11R		a	93 mm	86.4 mm ± 2 mm
Folded positions	Reference value	Specification								
A4R	8.5x11R									
a	93 mm	86.4 mm ± 2 mm								
7	If the folded positions are not within the specification, press the C button while pressing the Utility button.									
8	[Three-Folding adjustment Screen] Press the NEXT or BACK key to select the item to be adjusted.									
9	Enter a value with numeric keys and press the SET key. Setting range: -128 to +127 1 step = 0.1mm									
10	Repeat steps 4-9 until the folded positions are within the specification.									
11	Press the RETURN key to return to the Finisher adjustment mode menu Screen.									

6. 2 positions staple pitch adjustment

Adjusting the pitch of the 2 positions staple.

Step	Operation
1	Enter the 36 mode.
2	[Adjustment mode menu Screen] Press "⑥ Finisher adjustment".
3	[Finisher Adjustment mode Menu Screen] Press "⑧ 2 positions staple pitch adjustment".
4	[2 positions staple pitch adjustment Screen] Press the COPY SCREEN key.
5	Load papers in the tray, place the original on RADF, and then press the START button.
6	Check the pitch of the 2 positions staple.  A=120 mm (Standard)
7	When changing the dimension A, press the C button while pressing the Utility button.
8	[2 positions staple pitch adjustment Screen] Enter a value with numeric keys and press the SET key. Setting range: 120 to 160 1 step = 1 mm
9	Repeat steps 4-8 until the folded positions are within the specification.
10	Press the RETURN key to return to the Finisher adjustment mode menu Screen.

[20] List Output Mode

Outputting various data.

1. Select "**[7] List output mode**" in the Adjustment mode menu Screen to display the List output mode menu Screen.
2. List output mode menu consists of the following:
 - [1]** Machine management list 1
 - [2]** Adjustment data list
 - [3]** Pixel ratio data list
 - [4]** Machine management list 2
 - [5]** Parameter list
 - [6]** Memory dump list
 - [7]** Font pattern
3. Press the number key corresponding to the item to output.
The output setting screen for the selected item appears.
4. After output completes, return to the List output mode menu Screen.
5. Press the **[RETURN]** key in the List output mode menu Screen to return to Adjustment mode menu Screen.

Note: List output screen is not displayed for **[4]** Machine management list 2 and subsequent items unless address 30-1 is set to 1 with **[1]** Software DIPSW setting in 25 mode.

47 MODE

[1] 47 Mode / Multi Mode Setting Method

1. 47 Mode

This mode provides self-diagnostic functions (input/output check function) to check and adjust various signals and loads.

2. 47 mode operation

(1) Starting 47 mode

- Turn off the SW2 (sub power).
- Turn the SW2 back on while holding down 4 and 7 of the copy quantity button.
- Check that the 47 mode is started when message "I/O check mode" appears in the first row of the message area.

(2) Input/output check

- Use the copy quantity button to enter the code (Refer to the I/O check code list.) for the desired signal sources (such as sensors).
- The entered code appears enclosed in <> in the second row of the message area.
- The numbers are shifted left as they are displayed.
- Check the status of the signal displayed as H or L after "IN:" in the second row of the message display area.

Caution: H and L indicate the level of the signal input to PRCB (printer control board).

Note the relationship between the status of the input signal source and the message display.

(3) Output check

- Use the copy quantity button to enter the code (Refer to the I/O check code list.) for the desired output load.
- Press the Start button.

Depending on the output, a load will be activated or a signal will be output.

Start button	Code	Description
Before pressing indication	Input	Input signal level
After pressing	Output	Output load operation/signal

(4) Ending 47 mode

- Press the stop button to cancel the operation.
- Turn off the main switch to exit the 47 mode.

Step	Operation
1	Turn on the SW2 (sub power) while holding down 4 and 7 of the copy quantity button.
2	[I/O check Screen] Use the copy quantity button to enter the code.
3	Check the input signal check result displayed after "IN:" in the second row of the message area.
4	To perform the output check, press the Start button to check the output load.
5	Press the Stop button to end output check.
6	To perform other checks, enter a new code using the copy quantity button.
7	Turn off the main switch to exit the 47 mode.

Note1: No data appears on the second row of the message area when 47 mode is entered. Message appears when a number is entered.

Note2: Simply enter a new code to switch to another code.

Note3: A newly entered number is written over the previously entered number.

3. Multi mode

This machine features Multi modes amongst the 47 Mode functions.

This enables multiple I/O checks using a single I/O check code.

4. Multi mode operation method

Start the 47 mode and proceed as follows:

- (1) To check the input
 - a. Using the copy quantity button, enter the check code for the desired I/O.
 - b. The 47 mode code appears enclosed in <> in the second row of the message area.
 - c. Press the Utility button.
 - d. Enter the desired multi number using the copy quantity button. (Refer to the multi mode list.)
 - e. The multi number will be displayed enclosed in <>, following the 47 mode code and "-".

I/O check mode

< 10-01 > IN: -- OUT: --

- f. Press the Utility button.
- g. Check the status of the signal displayed as H or L after "IN:" in the second row of the message display area.
- (2) To check the output
 - a. Press the START button.
 - b. Press the STOP button after checking the output.
- (3) Ending multi mode
 - a. Turn off the main switch to exit the 47 mode (multi mode).

Step	Operation
1	Enter the 47 mode.
2	[I/O check Screen] Use the copy quantity button and enter the code.
3	Press the Utility button.
4	Enter the multi number using the copy quantity button.
5	Press the Utility button.
6	Check the input signal check result displayed after "IN:" in the second row of the message area.
7	To perform the output check, press the Start button to check the output load.
8	Press the STOP button to end the output check.
9	Turn off the main switch to exit the 47 mode.

Note1: To check another multi number in the same code, press the Utility button after completing step 8. And enter another multi number. A newly entered number is written over the previously entered number.

Note2: To return to the normal 47 mode, press the STOP button while holding down the Utility button after completing step 8.

[2] Adjustment Data Display

Displaying a list of machine adjustment values (factory-set values and current values).

No adjustment (data value change) can be made in this mode.

Step	Operation
1	Enter the 47 mode.
2	[I/O check Screen] Enter 94 with numeric keys. Make sure 94 is displayed in the message display field.
3	Press the Start button.
4	[Adjustment data display Screen] Press the or button to display a desired adjustment item.
5	Press the key to return to the I/O check mode screen.

[3] Hard Disk Check

This adjustment is to be performed when checking the total capacity and remaining capacity of the optional hard disk and when error codes related to the hard disk occur.

Step	Operation
1	Enter the 47 mode.
2	Enter 99 with numeric keys.
3	(1) Checking the total capacity of the hard disk: Press the Utility button and enter 1 with a numeric key. Make sure 99-01 is displayed in the message display field. (2) Checking the remaining capacity of the hard disk: Press the Utility button and enter 2 with a numeric key. Make sure 99-02 is displayed in the message display field. (3) Checking and recovering bad sectors on the hard disk: Press the Utility button and enter 3 with a numeric key. Make sure 99-03 is displayed in the message display field.
4	Press the START button.

- (1) When the total capacity of the hard disk is checked:
The total capacity of the hard disk is displayed after "OUT:" in the message display field.
- (2) When the remaining capacity of the hard disk is checked:
The remaining capacity of the hard disk is displayed after "OUT:" in the message display field.
- 5 (3) When bad sectors on the hard disk are checked and recovered:
"NOW" is displayed after "OUT:" in the message display field and bad sector check and recovery start. Several minutes later, "OK" is displayed in the case of normal termination, "NG" is displayed in the case of abnormal termination.
When "NG" is displayed, retry bad sector check and recovery. If "NG" is displayed again, replace the hard disk.

Note1: Once the bad sector check and recovery procedure start, it can not be canceled. (The STOP button and mode change key are ineffective.)

Note2: The hard disk is weak against vibration and shock. When moving the copy machine, be sure to remove the hard disk in advance.

[4] Input Checklist

Classification	Code	Symbol	Multi mode	Name	Display and Signal Source		
					H	L	
Analog signal	001	TLD		Remaining toner detection signal	In	Empty	
	002	VR301		ADF original size VR signal	0 to 255		
	003	TH1		Fixer upper roller temperature detection signal			
	004			Fixer upper roller temperature	°C		
	005			Humidity sensor signal	0 to 255		
	006			Dmax MONI signal			
	007			Dmax signal			
	008			γ signal			
	009			Machine inside temperature signal			
Paper feed	011	PS3	1	Tray 1 no paper detection signal	ON	OFF	
		PS9	2	Tray 2 no paper detection signal			
		PS15	3	Tray 3 no paper detection signal			
		PS21	4	Tray 4 no paper detection signal			
		PS33	5	By-pass feed tray no paper detection signal			
		PS108	6	LCT no paper detection signal			
	012	PS4	1	Tray 1 remaining paper detection signal			
		PS10	2	Tray 2 remaining paper detection signal			
		PS16	3	Tray 3 remaining paper detection signal			
		PS22	4	Tray 4 remaining paper detection signal			
		PS102	5	LCT remaining paper detection signal 1			
		PS103	6	LCT remaining paper detection signal 2			
		PS104	7	LCT remaining paper detection signal 3			
		PS105	8	LCT remaining paper detection signal 4			
	013	PS5	1	Tray 1 paper size detection signal 1			
		PS6	2	Tray 1 paper size detection signal 2			
		PS11	3	Tray 2 paper size detection signal 1			
		PS12	4	Tray 2 paper size detection signal 2			
		PS17	5	Tray 3 paper size detection signal 1			
		PS18	6	Tray 3 paper size detection signal 2			
		-	7	-			
		-	8	-			
		PS31	9	By-pass feed tray paper size detection signal 1			
		PS32	10	By-pass feed tray paper size detection signal 2			
	014	VR1	1	Tray 1 paper size detection VR signal	0 to 255		
		VR2	2	Tray 2 paper size detection VR signal			
		VR3	3	Tray 3 paper size detection VR signal			
		-	4	-			
		VR5	5	By-pass feed tray paper size detection VR signal			
	015	1	Tray 1 paper size signal	0:11x17,1:A3,2:B4,3:8.5x14,4:A4R,5:8.5x11R,6:B5			
		2	Tray 2 paper size signal	R,7:8.5x11.8:5.5x8.5R,9:A4,10:A5R11:B5,12:A5,13			
		3	Tray 3 paper size signal	:B6R,14:5.5x8.5,15:B6,16:Spe-			
		4	-	sial,17:F4(8.125x13.25),18:F4(8x13),19:F4(8.25x1			
		5	By-pass feed tray paper size signal	3),20:F4(8.5x13)			

Classification	Code	Symbol	Multi mode	Name	Display and Signal Source	
					H	L
Paper feed	016	PS2	1	Tray 1 upper limit detection signal	ON	OFF
		PS8	2	Tray 2 upper limit detection signal		
		PS14	3	Tray 3 upper limit detection signal		
		-	4	-		
		PS34	5	By-pass feed tray upper limit detection signal		
		PS35	6	By-pass feed tray lower limit detection signal		
		PS109	7	LCT upper limit detection signal		
		PS101	8	LCT lower limit detection signal		
Paper feed	017		1	Tray 1 tray set detection signal		
			2	Tray 2 tray set detection signal		
			3	Tray 3 tray set detection signal		
			4	-		
		PS1	1	Tray1 pre-registration detection signal		
		PS7	2	Tray2 pre-registration detection signal		
		PS13	3	Tray3 pre-registration detection signal		
		-	4	-		
Paper feed/Conveyance	020	PS107	5	LCT pre-registration detection signal		
		PS25	1	Tray 1 vertical conveyance detection signal		
		PS26	2	Tray 2 vertical conveyance detection signal		
		PS27	3	Tray 3 vertical conveyance detection signal		
		-	4	-		
	021	PS106	1	LCT paper feed detection signal		
		PS43	1	Transfer paper leading edge detection signal		
		PS36	2	Loop detection signal		
		PS44	3	Second paper feed detection signal		
	024	PS30	1	Fixing exit detection signal		
		PS37	2	Main body paper exit detection signal		
		PS42	3	Paper reverse detection signal		
		PS46	4	Reversed paper exit detection signal		
	025	PS29	1	Vertical conveyance door open/close detection signal		
		PS39	2	Front door open/close detection signal (left front door)		
		PS38	3	Front door open/close detection signal (right front door)		
		MS1 MS2	4	Front door open/close detection SW signal		
		PS100	5	LCT top cover open/close detection signal		
		PS110	6	LCT jam access cover open/close detection signal		
		PS40	7	Toner supply door open/close detection signal		
		PS61	1	Scanner home position detection signal		
Scanner unit	030	PS63	1	APS sensor 1 detection signal		
		PS64	2	APS sensor 2 detection signal		
		PS65	3	APS sensor 3 detection signal		
		-	4	-		
		-	5	-		
		-	6	-		
		-	7	-		
		PS51	8	APS timing detection signal		
Proper functions	051	SW100		LCT tray down SW	ON	OFF
	052	C(K)		Key counter	Provided	Not provided

ADJUSTMENT

Classification	Code	Symbol	Multi mode	Name	Display and Signal Source	
					H	L
ADF	060	PS310	1	Original size detection signal 1	ON	OFF
		PS309	2	Original size detection signal 2		
		PS304	3	Original registration detection signal 1		
		PS305	4	Original registration detection signal 2		
		PS306	5	Original conveyance detection signal		
		PS303	6	Original ejection detection signal		
		PS301	7	Last original detection signal		
		PS302	8	Original setting detection signal		
		MS301	9	Cover open/close MS detection signal	OFF	ON
ADF	060	PS311	10	ADF open/close detection signal	ON	OFF
		PS307	11	Original skew detection signal/F		
		PS308	12	Original skew detection signal/R		
FNS FN-113	076	PC1	1	1st Tray Exit Sensor	ON	OFF
		PC3	2	Storage Sensor		
		PC4	3	Upper Entrance Sensor		
		PC2	4	Lower Entrance Sensor		
		PC6	5	1st Tray Full Detecting Sensor		
		PC9	6	Elevator Tray Full Detecting Sensor		
		PC14	7	CD Aligning Home Position Sensor		
		PC12	8	Staple Home Position Sensor		
		PC13	9	Storage Roller Home Position Sensor		
		PC5	10	Exit Roll Home Position Sensor		
			11	Finisher Tray Paper Detecting Sensor		
			12	Stapler Home Sensor 1		
			13	Staple Empty Detecting Sensor 1		
			14	Self-Priming Sensor 1		
			15	Stapler Home Sensor 2		
			16	Staple Empty Detecting Sensor 2		
		PWB-F	17	Self-Priming Sensor 2		
		PC8	18	Elevator Tray Paper Detecting Sensor		
		S2,3	19	Elevator Tray Upper/Lower Limit Switch		
		PC10	20	Shift Home Position Sensor		
		S4	21	Hole Punch Position Switch		
		PC15	22	Punch Motor Pulse Sensor		
		PC11	23	Shift Motor Pulse Sensor		
		PC20	24	Transport Unit Acceleration Sensor		
		PC21	25	Transport Unit Deceleration Sensor		
		PC22	26	Transport Unit Entrance Sensor		
		PC23	27	Transport Unit Entrance Switching Sensor		
FNS FN-6/ FN-112		PS701	0	Sub tray paper exit detection signal	OFF	ON
		PS702	1	Tray upper limit detection signal	ON	OFF
		PS703	2	Tray lower limit detection signal	OFF	ON
		PS704	3	FNS entrance detection signal	ON	OFF
		PS705	4	Stacker entrance detection signal	ON	OFF
		PS706	5	Main tray paper exit detection signal	OFF	ON
		PS707	6	Stapler paper exit upper limit detection signal	OFF	ON
		PS708	7	Alignment HP/U detection signal	ON	OFF
		PS709	8	Paper exit belt HP detection signal		
		PS713	9	Stapler rotation HP detection signal		
		PS711	10	Stapler movement HP detection signal		
		PS712	11	Paper exit HP detection signal		
		PS714	12	Clincher rotation HP detection signal		
		PS715	13	Counter reset HP detection signal		

Classification	Code	Symbol	Multi mode	Name	Display and Signal Source	
					H	L
FNS FN-6/ FN-112	076	PS718	14	Shift HP detection signal	ON	OFF
		PS720	15	Stacker no paper detection signal		
		SW702	16	Staple/R SW detection signal	OFF	ON
		PS730	17	Stapler HP/R detection signal		
		SW701	18	Cartridge/R detection signal		
		M710	19	Clincher /R detection signal	Other than start	Start
		-	20	-		
		PS732	21	Clincher HP/R detection signal	OFF	ON
		PS719	22	Sub tray full detection signal	ON	OFF
		MS701	23	FNS interlock MS detection signal		
		SW704	24	Staple/F SW detection signal	OFF	ON
		PS731	25	Stapler HP/F detection signal		
		SW703	26	Cartridge/F detection signal		
		M715	27	Clincher /F detection signal	Other than start	Start
		-	28	-		
		M733	29	Clincher HP/F detection signal	OFF	ON
		M707	30	Paper exit motor lock detection signal	Other than controlled speed	Controlled speed
		FNS	31	FNS connection signal		
		PS722	32	Folding knife HP detection signal	ON	OFF
		PS723	33	Stopper HP detection signal		
		PS724	34	Alignment/L HP detection signal	OFF	ON
		PS725	35	Folding exit detection signal		
		PS726	36	Folding passage detection signal		
		PS729	37	Folding full detection signal	Other than full	Full
		-	38	Paper edge PS (leading/trailing/side edge sensor 1)		
PZ		M720	39	Folding conveyance motor lock detection signal	Other than controlled speed	Controlled speed
		PS8	40	Exit PS		
PZ		-	41	Paper edge PS (side edge sensor 2)	No Paper	With Paper
		-	42	Paper edge PS (side edge sensor 3)		
		-	43	Paper edge PS (side edge sensor 4)		
		M203	44	PI conveyance motor		
PZ		-	45	-	-	-
		PS4	46	Punch shift HP	ON	OFF
		PS2	47	2nd stopper HP	OFF	ON
		MS	48	Front door MS		
		PS6	49	Paper scraps box detection	ON	OFF
		-	50	Z-folding conveyance motor locking detection		
		-	51	-	-	-
PI		PS201	52	PI passage /U detection signal	ON	OFF
		PS206	53	PI passage /L detection signal		

ADJUSTMENT

Classification	Code	Symbol	Multi mode	Name	Display and Signal Source		
					H	L	
PZ	076	PS3	54	1st stopper HP	OFF	ON	
		PS7	55	Paper scraps full detection		OFF	
		PS5	56	Punch HP	ON	OFF	
		-	57	Fan motor locking detection	Lock	Other than lock	
		-	58	-	-	-	
		-	59	-		-	
		-	60	-		-	
FNS	PI	PS716	61	Gate HP detection signal	ON	OFF	
PZ		-	62	Paper edge PS (side edge sensor 5)	No Paper	With Paper	
		PS1	63	Passage PS		With Paper	
076		PS202	64	No sheet /U detection signal	OFF	ON	
		PS203	65	Sheet setting /U detection signal		ON	
		PS205	66	Tray lower limit/U detection signal	ON	OFF	
		PS204	67	Tray upper limit/U detection signal		OFF	
		-	68	PI start /stop detection signal	OFF	ON	
		-	69	PI punch SW detection signal			
		-	70	PI mode SW detection signal			
		MS201	71	PI interlock MS detection signal			
		PS207	72	No sheet /L detection signal			
		PS208	73	Sheet setting /L detection signal	Not connect	Connect	
		PS210	74	Tray lower limit /L detection signal		OFF	
		PS209	75	Tray upper limit /L detection signal		ON	
		-	76	-		-	
		VR212	77	Sheet size/ L detection VR signal		ON	
		-	78	-		-	
		PI	79	PI connection signal		Not connect	
PK PK-2		-	80	-	-	-	
		-	81	-		-	
		-	82	-		-	
		PS801	83	Punch HP detection signal	ON	OFF	
		-	84	-	-		
PK PK-5	080	-	85	-	No Paper	With Paper	
		PS802	86	Punch scraps full detection signal	OFF	ON	
		PS804	87	Punch scraps box detection signal	Set	Other than set	
		-	88	Paper edge PS (side edge sensor 1)			
		-	89	Paper edge PS (side edge sensor 2)			
ADU		-	90	Paper edge PS (side edge sensor 3)	ON	OFF	
		-	91	Paper edge PS (side edge sensor 4)			
		-	92	Paper edge PS (side edge sensor 5)			
		PS803	93	Punch shift HP			
		-	94	PK-5 detection			
		PS45	1	ADU reverse detection signal	ON	OFF	
		PS48	2	ADU conveyance detection signal /2			
		PS49	3	ADU deceleration detection signal			
		PS50	4	ADU pre-registration detection signal			
		PS47	5	ADU handle detection signal			
		PS41	6	ADU conveyance detection signal			

[5] Output checklist

Classification	Code	Symbol	Multi mode	Name	Cannot be set or changed in field
Analog signal	000	L1		*1 Exposure lamp	
	001	M13		Toner bottle motor	
	002	HV		Charger	x
	003			Transfer	x
	004			Separation (AC+DC)	x
	005			D max LED	x
	006			γ LED	x
	007			Jam detection LED	x
	008	HV		Transfer access guide plate	x
	009			Bias	
	010			Toner guide roller	x
Paper feed	020	SD100		LCT paper feed pickup SD	
				Feed MC	
	021	MC3	1	Tray 1	
		MC5	2	Tray 2	
		MC7	3	Tray 3	
		-	4	-	
		MC101	5	LCT	
		MC11	6	Vertical conveyance CL1	
		MC12	7	Vertical conveyance CL2	
	022			Pre-registration CL	
		MC4	1	Tray 1	
		MC6	2	Tray 2	
		MC8	3	Tray 3	
		-	4	-	
		MC102	5	LCT	
				Tray up motor /LCT UP/DOWN motor	
	023	M16	1	Tray 1	
		M17	2	Tray 2	
		M18	3	Tray 3	
		-	4	-	
		M100	5	LCT up	
			6	LCT down	
		M20	7	By-pass up	
			8	By-pass down	
	025	MC1		Registration MC	

ADJUSTMENT

Classification	Code	Symbol	Multi mode	Name	Cannot be set or changed in field
Paper feed	026	M6		Loop roller motor	
			1	Loop motor H(470 mm/s), forward	
			2	Loop motor L(320 mm/s), forward	
			3	Loop motor L(280 mm/s), forward	
			4	Loop motor L(185 mm/s), forward	
			5	Loop motor H(470 mm/s), backward	
			6	Loop motor L(320 mm/s), backward	
			7	Loop motor L(280 mm/s), backward	
			8	Loop motor L(185 mm/s), backward	
	027	M7		Paper exit motor	
			1	Paper exit motor(320 mm/s)	
			2	Paper exit motor(280 mm/s)	
			3	Paper exit motor(185 mm/s)	
	028	M1	1	Paper feed motor	
		M101	2	LCT Paper feed motor (470 mm/s)	
	029	SD1		Separation claw SD	
Scanner unit	-	-		-	
	031	M11		*2 Scanner drive motor	
	032	M15		*3 Polygon motor	
			0	320 mm/s	
			1	280 mm/s	
			2	185 mm/s	
	034			*4 Shading correction	
	037			-	
	038			-	

***Caution:** When the START key is pressed, "Watch input?" YES and NO appears. When YES or NO is selected for each code, the following operation is performed:

*1 YES Turns ON the exposure lamp and scanner cooling fan.

NO Turns ON the exposure lamp for 10 minutes.

*2 YES Performs HP search and scanner to-and-fro operations.

NO Moves the scanner 10mm to the right.

*3 YES Turns ON the polygon motor and write unit cooling fan.

NO Turns ON the polygon motor for 30 seconds.

*4 YES Performs HP search and shading operations.

NO Moves the scanner 10 mm to the right.'

Classification	Code	Symbol	Multi mode	Name	Cannot be set or changed in field
Main body	040	M4		Fixing motor	
			0	Fixing motor (320 mm/s)	
			1	Fixing motor (280 mm/s)	
			2	Fixing motor (185 mm/s)	
	041	M2/M3		Drum motor	
			0	Drum motor / Developing motor (320 mm/s)	
			1	Drum motor / Developing motor (280 mm/s)	
			2	Drum motor / Developing motor (185 mm/s)	
	042		M	Fan motor	
			FM9	1 Scanner cooling fan	
			FM2	2 Write unit cooling fan (High)	
			FM3	3 Write unit cooling fan (Low)	
			FM4	4 Conveyance suction fan	
			FM1	5 Developing suction fan	
			FM1	6 Main body cooling fan (High)	
			FM5	7 Main body cooling fan (Low)	
			FM8	8 Cleaner cooling fan (High)	
			FM13	9 Cleaner cooling fan (Low)	
			FM10	10 Main body cooling fan/2	
			FM13	11 Power supply cooling fan	
			FM10	12 ADU reverse motor cooling fan	
	043	-		Counter	
			1	Total counter	
			2	Key counter	
	045	-	1	-	
			2	-	
			3	-	
			SD2	4 Fixing web SD	
	046	M14		Charger cleaning motor	
			0	To-and-fro operation	
			1	Move to rear	
			2	Move to front	
	047	M10		Transfer/separation cleaning motor	
			0	To-and-fro operation	
			1	Move to rear	
			2	Move to front	
	048	-		Illuminate all LEDs on the operation board	
	049	-		Operation unit check	
	050	M2/M3		Developing motor / Drum motor	
	051	PCL		PCL	
	052	TSL		TSL	
	054	MC14		Toner recycle MC	
	055	-		Message test	
	056	M12		Toner supply motor	
	057			-	
	058			-	
	059			-	

Classification	Code	Symbol	Multi mode	Name	Cannot be set or changed in field
RADF	060	M301	1	Original feed motor (forward)	
			2	Original feed motor (backward)	
		M302	3	Original conveyance motor (forward)	
			4	Original conveyance motor (backward)	
		MC301	5	Paper feed MC	
		SD303	6	Pressure roller release SD	
		SD301	7	Reverse gate SD	
		SD302	8	Paper exit gate SD	
		FM301	9	Original conveyance motor cooling fan	
		M701	1	FNS conveyance motor	
FNS FN-6/ FN-112	075	M702	2	Shift motor (HP search)	
			3	Shift motor (moves to the shifting position)	
			4	Shift motor (one turn)	
		M703	5	Tray up/down motor (HP search)	
			6	Tray up/down motor (moves to the lower limit)	
			7	Tray up/down motor (up/down operation in the case of small quantity of staple mode)	
		M705	8	Alignment motor /U (HP search)	
		M707	9	Paper exit roller motor (staple mode HP search)	
			10	Paper exit roller motor (reverse)	
		M708	11	Paper exit opening motor (HP search)	
			12	Paper exit opening motor (shifts the opening)	
		M709	13	Stapler motor /R (initial)	
			14	Stapler motor /R (stapling operation)	
		M714	15	Stapler motor /F (initial)	
			16	Stapler motor /F (stapling operation)	
	075	M711	17	Stapler movement motor HP search (moves 2 stapling positions)	
			18	Stapler movement motor HP search (moves 1 stapling position for A4)	
	075	M713	19	Stacker entrance motor	
		M718	20	Stopper motor (HP search)	
		M716	21	Alignment motor /L (HP search)	
		-	22	-	
		M719	23	Folding knife motor (HP search)	
		M720	24	Folding conveyance motor	
			25	-	
			26	-	
			27	-	
			28	-	
			29	-	
		SD704	31	Paper exit SD	
		SD705	32	By-pass gate SD	
	075	M705	33	Alignment /U motor (open)	
			34	Alignment /U motor (close)	
			35	Alignment /U motor (rocking)	
	075	M716	36	Alignment motor /L (open)	
			37	Alignment motor /L Close(A4 position)only allowed from HP	
			38	Alignment motor /L rocking (only allowed from Open position)	
	075	M718	39	Stopper motor	
		-	40	-	
	075	FM701	50	Stacker fan	
		-	51	-	

Classification	Code	Symbol	Multi mode	Name	Cannot be set or changed in field	
FNS FN-6/ FN-112	075	-	52	-		
		-	53	-		
		-	54	-		
		-	55	-		
		-	56	-		
		-	57	-		
		-	58	-		
		-	59	-		
		-	60	-		
		-	61	-		
		-	62	-		
		-	63	-		
		MC202	64	Conveyance MC /L		
PI		M202	65	Tray up/down motor /L (move to the lower limit)		
			66	Tray up/down motor /L (HP research)		
		SD202	67	Sheet feed SD /L		
		-	68	-		
		-	69	-		
		-	70	-		
		-	71	-		
PZ		M1/M6	72	Registration motor/Conveyance motor		
		M2	73	1st stopper motor		
		M3	74	2nd stopper motor		
		SD2	75	Gate SD/U		
		SD1	76	Gate SD/L		
PK		MC1	77	Punch clutch		
		M801	78	Punch motor		
		M802	79	Punch shift motor (HP search)		
PZ		-	80	-		
		M7	81	Punch scraps conveyance motor		
PI		M10	82	Main motor cooling fan		
		MC201	83	Conveyance MC /U		
			84	Tray up/down motor /U (rise)		
			85	Tray up/down motor /U (HP search)		
		SD201	86	Sheet feed SD /U		
		M203	87	PI conveyance motor		
		M712	88	Gate drive motor (HP search : sub tray direction)		
FNS FN-6/ FN-112			89	Gate drive motor (switches the stacker direction)		
			90	Gate drive motor (switches the main tray direction)		
		M721	91	Sub-tray paper exit motor		
		M704	92	Clincher rotation motor (HP search)		
			93	Clincher rotation motor (skew shift)		
		M706	94	Stapler rotation motor (HP search)		
			95	Stapler rotation motor (skew shift)		
PZ		SD706	96	Three folding SD		
		M4	97	Punch motor		
		M5	98	Punch shift motor		
FNS			99	FNS paperless running mode		

ADJUSTMENT

Classification	Code	Symbol	Multi mode	Name	Cannot be set or changed in field
ADU	080		1	Reverse gate SD	
			2	ADU lock SD	
	081	MC13		ADU conveyance MC	
	082	MC2		ADU conveyance MC	
	083	M5		Second paper feed motor	
				ADU reverse motor	
			1	Forward(320 mm/s)	
			2	Forward(280 mm/s)	
			3	Forward(185 mm/s)	
			4	Forward(600 mm/s)	
			5	Forward(700 mm/s)	
			6	Backward(660 mm/s)	
			7	Backward(577 mm/s)	
			8	Backward(382 mm/s)	
Adjustment process	085	-	-	-	
	086	M8		Reversed paper exit motor	
			1	Forward(320 mm/s)	
			2	Forward(280 mm/s)	
			3	Forward(185 mm/s)	
			4	Forward(600 mm/s)	
			5	Forward(700 mm/s)	
			6	Backward(660 mm/s)	
	092			Process initial set (Prohibited in the field)	x
	093			-	
	094			Adjustment mode display mode	
	096			Finished process and shipment setting (Prohibited in the field)	x
	097			DIMM capacity check for Electronics RDH	
	098			DIMM check for Electronics RDH	
	099	HDD	1	HDD total capacity check	
			2	HDD remaining capacity check	
			3	HDD bad sectors check and recovery	

OTHER ADJUSTMENT

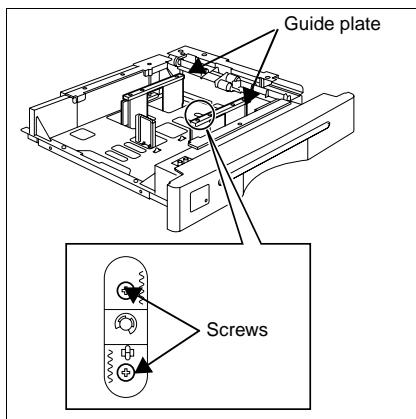
[1] Centring Adjustment

Caution: Centring adjustment need not be performed normally because paper inclination is detected in the second paper feed section and original image is corrected in the image processing unit to fit an inclined paper. Centring adjustment is required only when the detected paper inclination is not within the automatic image correction range.

1. Tool

- Screwdriver (Phillips)

2. Tray 1/2/3 centring adjustment

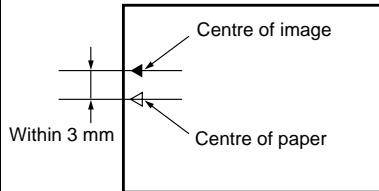


a. Adjustment method

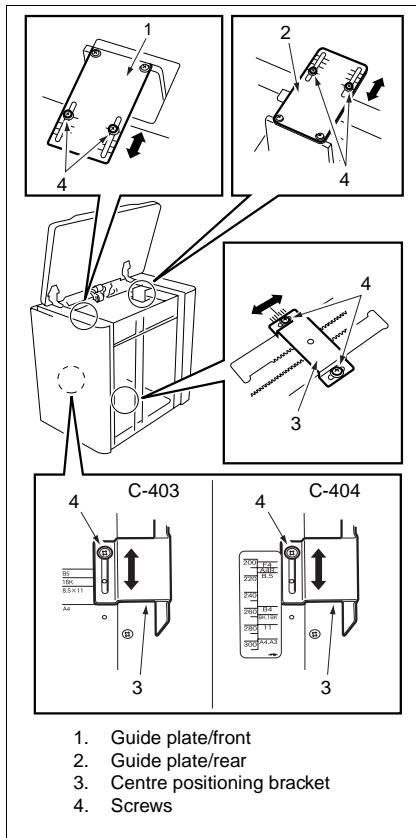
Step	Operation
1	Draw out the tray.
2	Loosen the two screws at the centre of the tray.
3	Slide the guide plate to adjust the centre position.
4	Tighten the two screws securely.
5	Insert the tray and make a copy to check the result.
6	Perform steps 1-5 repeatedly until mis-centring is included in the automatic adjustment range (± 3 mm).
7	Perform the tray adjustment in 36 mode.

Caution: Disable the mis-centering correction function by setting the dip switch 12-3 and confirm it (Enter 1 to set to ON). Confirm it using the internal pattern No.16

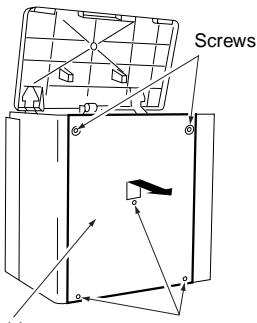
Standard value of mis-centring: within 3 mm



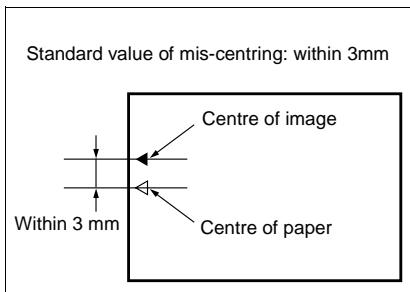
3. LCT tray centring adjustment



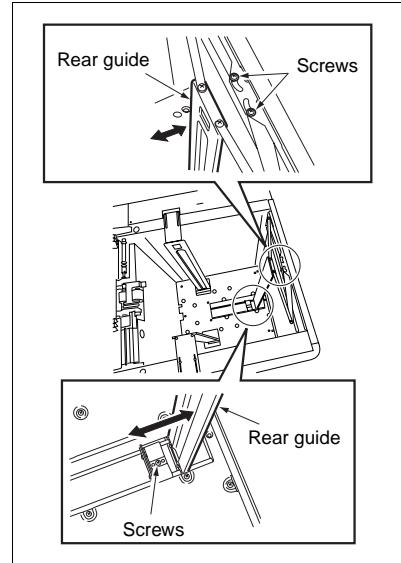
a. Adjustment method

Step	Operation
1	Raise the up/down plate.
2	Open the top cover.
	Remove five screws to detach the side cover (right).
3	 <p>Screws Right side cover Screws</p>
4	Loosen two screws on the upper part of LCT to slide the guide plates (front/rear) the same amount in the same direction.
5	Secure the guide plates by tightening two screws firmly.
6	Loosen three screws to slide the centre positioning brackets the same amount in the same direction as you did for the guide plates (front/rear) in the step 4.
7	Secure the centre positioning brackets by tightening three screws firmly.
8	Put the LCT back into the original position and make a copy to check the result.
9	Perform steps 1-8 repeatedly until mis-centering is included in the automatic adjustment range (± 3 mm).

Caution: Disable the mis-centering correction function by setting the dip switch 12-3 (Enter 1 to set ON) and confirm it. Confirm it using the test pattern No.16.



4. Setting the LCT Rear Guide (C-404 only)



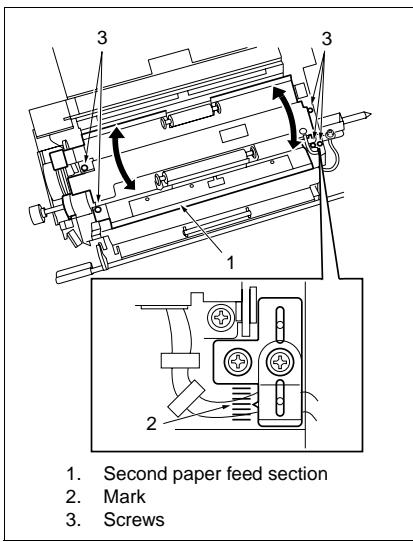
a. Adjustment method

Step	Operation
1	Open the top cover.
2	Press SW100 (LT tray down switch) to lower the up/down plate to the bottom.
3	Loosen two screws at the top of the rear guide and one screw at the bottom.
4	Set paper on the up/down plate, align the trailing edge of paper with the lower end of the rear guide, then fasten the lower screw.
5	Fasten the two upper screws temporarily and move the up/down plate to the highest position.
6	Set paper on the up/down plate, align the trailing edge of paper with the upper end of the rear guide, then tighten the two upper screws finally.

Reference: LCT tray size setting can be performed in the key operation mode by setting DIPSW21-1 to 1 in the 25 mode.

[2] Skew adjustment (Main body)

1. Tool
 - Screwdriver (Phillips)
2. Adjustment method



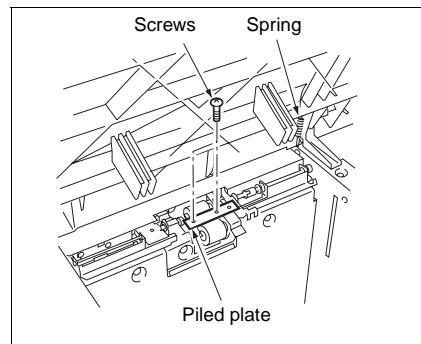
Step	Operation
1	Make a copy to measure for skew.
2	Loosen the five screws securing the second paper feed unit.
3	Rock the second paper feed unit to adjust using the mark as a guide.
4	Retighten the five screws.
5	Make adjustments by repeating steps 2 to 4 until the skew becomes within the specified range.

Specified range: Paper skew $\pm 5\%$ or less
(Paper skew in the paper feed direction)

[3] Adjusting the LCT Paper Feed Roller Pressure (C-404 only)

Caution: This adjustment is required when no paper feed occurs.

1. Tool
 - Screwdriver (Phillips)
2. Adjustment method



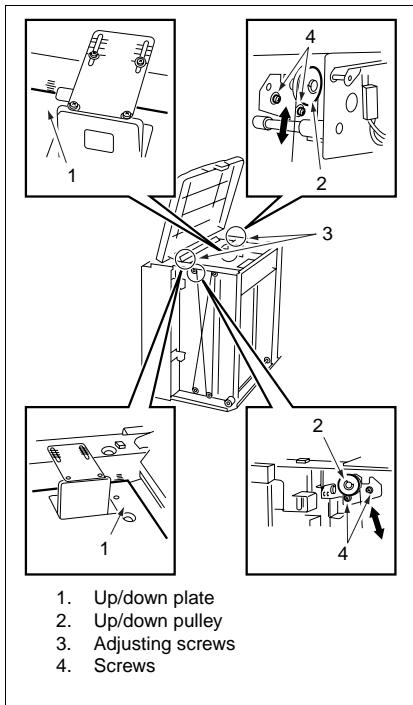
Step	Operation
1	Open the top cover.
2	Remove the spring.
3	Install a weight plate above the paper feed rollers using the two screws.
4	Make a copy to check whether paper is fed properly.
5	If paper is not fed properly, add another weight plate and repeat steps 5 and 6.
6	Install the spring.

Caution: Four weight plates come standard with the LCT, and can be installed up to six.

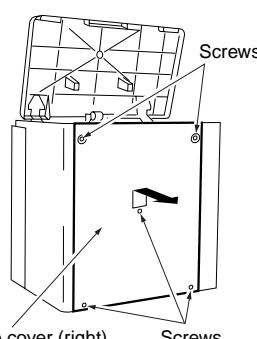
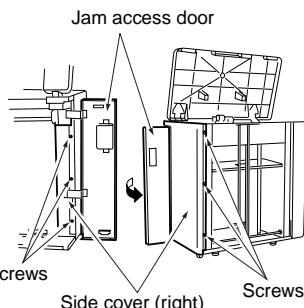
[4] Paper up/down plate horizontal adjustment (LCT only)

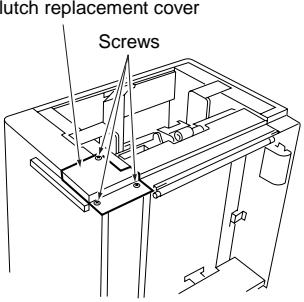
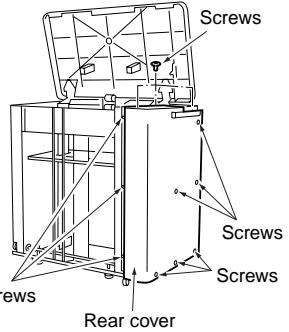
Caution: Up/down plate horizontal adjustment must be carried out when a paper feed jam occurs frequently or after replacement of the up/down wires of a tray.

1. Tool
 - Screwdriver (Phillips)
2. LCT up/down plate horizontal adjustment of C-403

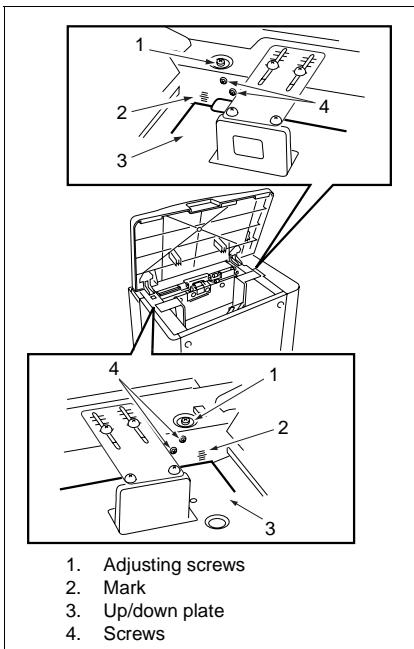


a. Adjustment method

Step	Operation
1	Raise the up/down plate.
2	Open the top cover.
	Remove five screws to detach the side cover (right).
3	 <p>Screws Side cover (right) Screws</p>
4	 <p>Jam access door Screws Side cover (right) Screws</p>

Step	Operation
5	<p>Remove three screws to detach the clutch replacement cover.</p>  <p>Clutch replacement cover Screws</p>
6	<p>Remove twelve screws to detach the rear cover.</p>  <p>Screws Rear cover Screws Screws</p>
7	<p>Loosen two screws and adjust the position for each up/down pulley using an adjustment screw so that the front and rear of the up/down plate are at the same height.</p>
8	<p>Fasten two screws securely for each up/down pulley to fix its position.</p>
9	<p>Install the rear cover, clutch replacement cover, front cover, and side cover (right).</p>

3. LCT up/down plate horizontal adjustment of C-404



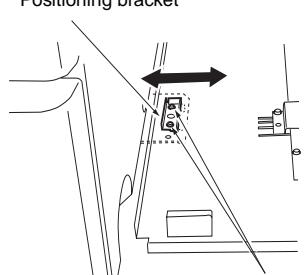
a. Adjustment method

Step	Operation
1	Lift the up/down plate up.
2	Open the top cover.
3	Loosen the two screws and adjust the position using an adjustment screw and the mark so that the front and rear of the up/down plate are at same height.
4	Fasten two screws securely

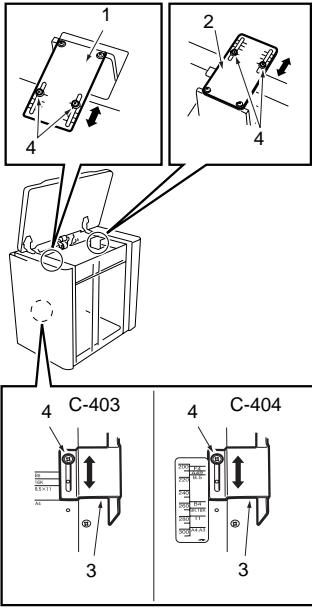
[5] Skew adjustment (LCT only)

Caution: Skew adjustment is required when the paper supplied from the current tray is different from the paper supplied from other trays in the way it is skewed. However, this adjustment has little effect because skew of paper supplied from all trays is corrected in the second paper feed unit.

1. Tool
 - Screwdriver (Phillips)
2. LCT skew adjustment
 - a. Adjustment method (when all printed sheets are skewed)

Step	Operation
1	Print a test pattern (No.16) in the continuous copy mode to check for skew.
2	Open the jam access door of the LCT and adjust the installation position of the positioning bracket on the bottom plate. Positioning bracket 

- b. Adjustment method (when some printed sheets are skewed irregularly)

Step	Operation
1	Print a test pattern (No.16) in the continuous copy mode to check for skew.
2	Remove the side cover (right).
3	Loosen the five screws securing the guide plates (front and rear) and the centering positioning bracket temporarily. Press the guide plates (front and rear) against paper, then tighten the five screws. 

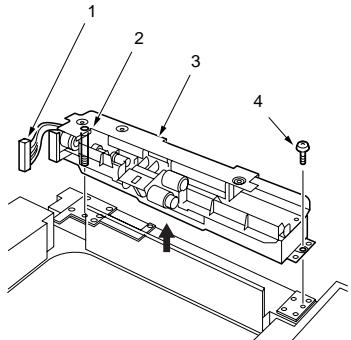
- 1. Guide plate/front
- 2. Guide plate/rear
- 3. Centre positioning bracket
- 4. Screws

Reference: The indicated size of each guide plate is about 2mm wider than the size of regular paper. The 2mm gap may cause paper skew depending on the paper type. To reduce this skew, press the guide plates (front and rear) against paper tightly.

[6] Tray spring pressure adjustment

Caution: Tray spring pressure adjustment must be performed when no feed or double feed of paper occurs. Tray spring pressure may be affected by the type of paper used or the operating environment (under low temperature conditions, no feed of paper tends to occur. Under high temperature conditions, double feed of paper tends to occur). Excessive adjustment of tray spring pressure may exacerbate the problem. Take care.

1. Tool
 - Screwdriver (Phillips)
 - Flat-nose pliers
2. Tray 1/2/3 spring pressure adjustment
 - a. Adjustment method

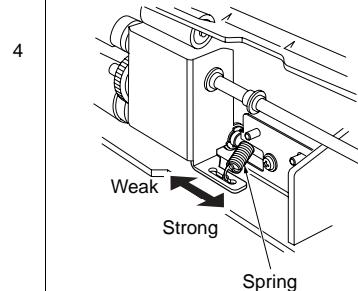
Step	Operation
1	Draw out the tray.
2	Remove the connector (CN814,834,854).
3	Remove one screw, loosen one hold-down shaft screw, and detach the paper feed unit.  <ul style="list-style-type: none"> 1. Connector (CN814,834,854) 2. Fixing shaft screw 3. Paper feed unit 4. Screw

Change the spring hooking position at the bottom of paper feed unit.

Weak: Double feed is prevented.

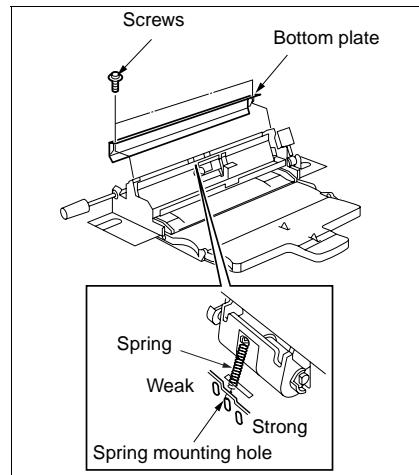
Strong: No feed is prevented.

Reference: Reference: The spring load changes about 10 % each time the spring is hooked in the next slit.



- 5 Set the tray.

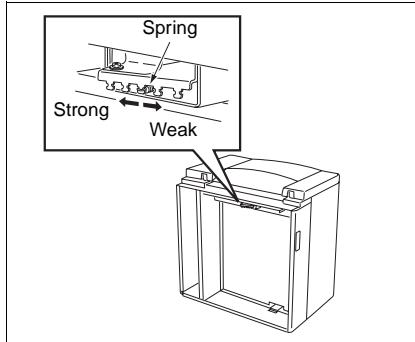
3. By-pass paper feed spring pressure adjustment



a. Adjustment method

Step	Operation
1	Remove the by-pass tray.
2	Remove two screws and detach the bottom plate assembly.
3	Change the spring hooking position. Weak: Double feed is prevented. Strong: No feed is prevented. Reference: The spring load changes about 15 % each time the spring is hooked in the next slit.
4	Install the by-pass tray.

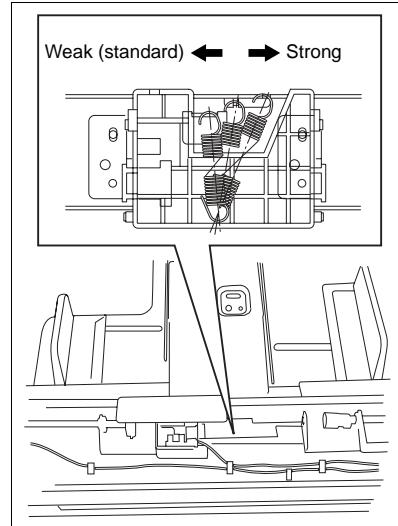
4. LCT spring pressure adjustment



a. Adjustment method

Step	Operation
1	Remove the LCT from the main body.
2	Change the spring hooking position. Weak: Double feed is prevented. Strong: No feed is prevented. Reference: The spring load changes about 10 % each time the spring is hooked in the next slit.
3	Re-install the LCT.

5. PI spring pressure adjustment



a. Adjustment method

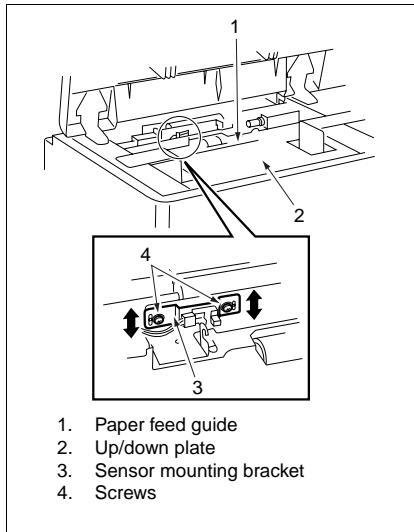
Step	Operation
1	Remove the following parts. <ul style="list-style-type: none"> • Top cover • Paper feed roller unit • Double feed prevention roller
2	When adjusting the spring pressure for the lower tray, open the upper unit and detach the following parts. <ul style="list-style-type: none"> • Paper feed roller unit • Double feed prevention roller
3	Using flat-nose pliers, change the spring hooking position through the hole at double feed prevention roller. Weak: Double feed is prevented. Strong: No feed is prevented. Reference: Normally the spring hooking position should be changed when no feed occurs. However, if the setting for this position is too strong, double feed may occur for normal paper.
4	Install the parts, following the removal steps in reverse.

[7] Paper feed height (upper limit) adjustment (LCT only)

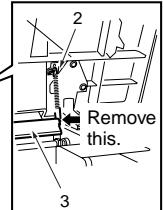
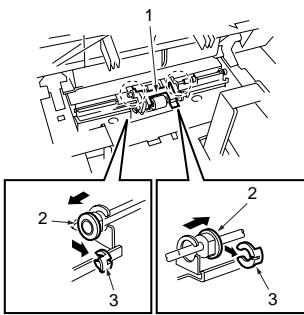
Caution1: Paper feed height (upper limit) adjustment must be performed when no paper feed occurs, when the leading edge of the fed paper is folded or when a convexly curled paper is fed. To perform this adjustment, move the upper limit sensor mounting bracket vertically.

Caution2: This adjustment may affect the release amount of the pick-up so that [8] pick-up roller release amount adjustment must be performed after this adjustment.

1. Tool
 - Screwdriver (Phillips)
 - Scale
2. LCT Adjustment of paper feed height (upper limit)



a. Adjustment method

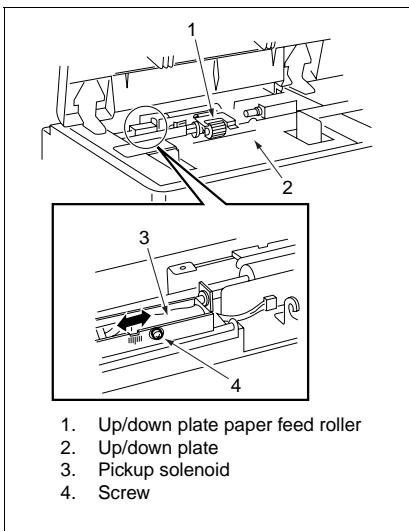
Step	Operation
1	Move the up/down plate up.
2	Open the top cover.
3	Measure the distance between the top surfaces of the paper feed guide and paper up/down plate and check whether it is within specifications. Standard value: 2 to 5 mm If the leading edge of the paper is folded irrespective of whether the above distance is within specifications, perform steps 4 and later.
4	Remove the spring from the paper pick-up roller unit.  <p>1. Top cover 2. Spring 3. Paper feed roller unit</p>
5	Remove two stop rings to slide the two bearings outward, then remove the paper feed roller unit.  <p>1. Paper feed roller unit 2. Bearing 3. Stop ring</p>

6	Remove two screws securing the sensor mounting bracket and install them in the outside mounting holes (oblong holes) temporarily.
7	<p><When the heights are not within specifications> Adjust the position of the sensor mounting bracket vertically so that the distance between the top surfaces of the paper feed guide and paper up/down plate is within the specifications.</p> <p>When raising the height of the paper up/down plate: Lower the sensor mounting bracket.</p>
	<p>When lowering the height of the paper up/down plate: Raise the sensor mounting bracket.</p> <p><When any fault has occurred> When the paper has folded leading edge: When the paper has dented curl: Raise the sensor mounting bracket. When the paper has convex curl: Lower the sensor mounting bracket.</p>
8	Install the paper feed roller unit and spring.
9	Close the top cover.

[8] Pick-up release amount adjustment (LCT only)

Caution: Pick-up release amount adjustment must be performed when a no-feed jam occurs frequently. To perform this adjustment, adjust the mounting position of the pick-up solenoid.

1. Tool
 - Screwdriver (Phillips)
 - Scale
2. LCT pick-up release amount adjustment



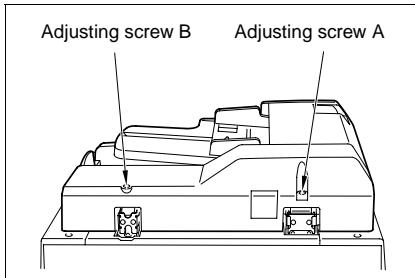
1. Up/down plate paper feed roller
2. Up/down plate
3. Pickup solenoid
4. Screw

a. Adjustment method

Step	Operation
1	Move the paper up/down plate up.
2	Open the top cover.
3	Remove the paper feed pick-up cover/B.
4	Remove the spring from the paper feed roller unit. <p>1. Top cover 2. Spring 3. Paper feed roller unit</p>
5	Pull the moving parts of the pick-up solenoid and check whether the distance between the bottom surface of the paper feed roller and the top surface of the up/down plate is within specification. Specification: 0.5 to 2.5 mm If the distance is out of spec, perform steps 5 and later.
6	Loosen one screw and adjust the mounting position for the pick-up solenoid. Caution: Take a note to remember the initial mounting position.
7	Secure the pick-up solenoid by tightening the screw.
8	Install the spring.
9	Install the paper feed pick-up cover/B.
10	Close the top cover.

[9] RADF mounting position adjustment

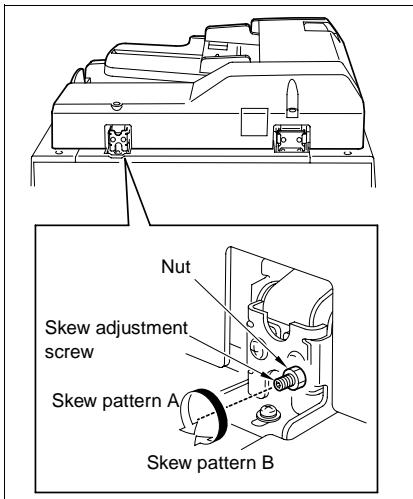
- Tool
 - Screwdriver (Phillips)
 - Open-end wrench or flat-nose pliers.
- Adjustment method



Step	Operation
1	Open the RADF, remove two screws and detach the top cover (left).
2	Close the RADF.
3	Check if both stopper pieces on the RADF side touch the slit glass.
4	If both stopper pieces do not touch the slit glass, make adjustments using adjusting screws A and B alternately.
5	Perform steps 3 and 4 repeatedly until the two stopper pieces touch the slit glass at the same time.
6	Using the two screws, install the top cover (left).

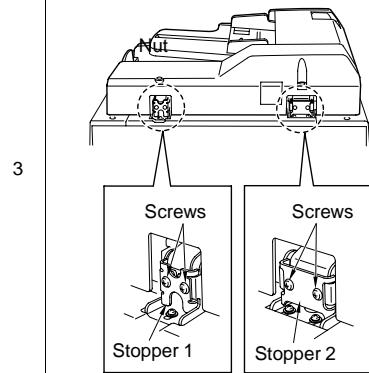
[10] RADF Skew adjustment

1. Tool
 - Hexagonal wrench
 - Open-end wrench or flat-nose pliers
2. Adjustment method

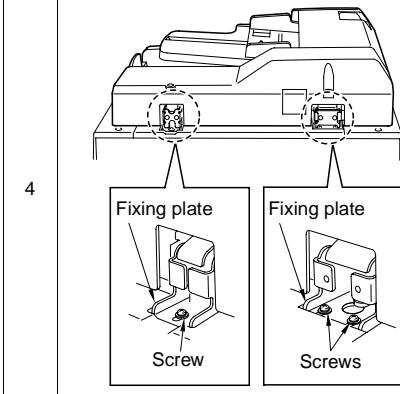


Step	Operation
1	Set A3 paper into the upper tray.
2	<p>Set the adjustment chart on the RADF, make a copy, and check the skew. Standard value: within $\pm 0.3\%$</p> <p>Feed direction</p> <p>Skew pattern A Skew pattern B</p> <p>Perform the following adjustment if the skew is beyond the standard value.</p>

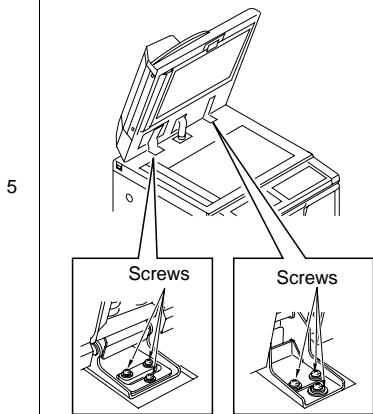
Remove two screws for each of the two stoppers.



Loosen the three screws illustrated.



Open the RADF and loosen the six screws illustrated.



6 Close the RADF and loosen the nut of skew adjustment screw.

7 Turn the skew adjustment screw to adjust the skew.

For the skew pattern A:

Turn the skew adjustment screw counterclockwise and move the RADF until it reaches the tip of the screw.

For the skew pattern B:

Turn the skew adjustment screw clockwise.

8 Make a copy to check the skew.

9 Fasten the skew adjustment screw with its nut.

10 Fasten the RADF securing screws (9, with 6 in front and 3 in rear).

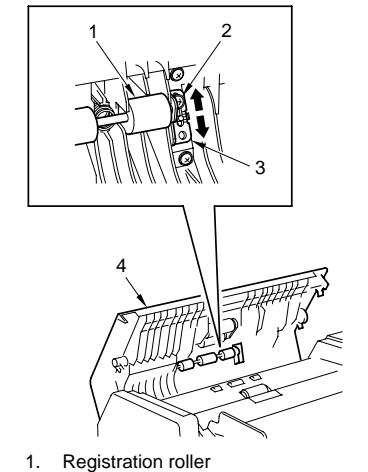
11 Make adjustment by repeating steps 3 to 9 until the skew becomes within the standard value.

12 Use two screws to install each of the two stoppers.

[11] RADF paper skew adjustment

- Face side of original paper skew adjustment

Note: Perform this adjustment after completing the RADF skew adjustment described in the previous page.



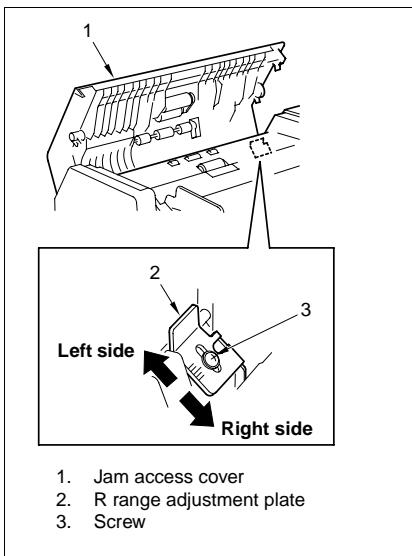
1. Registration roller
2. Screw
3. Registration roller bracket
4. Jam access cover

Step	Operation
1	<p>Make a copy in the single sided to single sided copy mode, then check the skew of the original. (Either pattern A or B)</p> <p style="text-align: center;">Image</p> <p>Copy paper feed direction</p> <p>Copy paper</p> <p>Paper skew pattern A Paper skew pattern B</p>
2	Open the Jam access cover.
3	Loosen the retaining screw to release the registration roller bracket.

	<p>Move the registration roller bracket one calibration in the direction below according to the paper skew pattern.</p> <p>For skew in pattern A: Move the registration roller bracket downwards (direction down with original feed flow).</p> <p>For skew in pattern B: Move the registration roller bracket upwards (direction up towards original feed flow).</p>
5	Repeat steps 2 to 4 until the original skew is within specified range (0.5 % or less).

Specified range: Paper skew $\pm 0.5\%$ or less
(Paper skew in the paper feed direction)

2. Back side of original paper skew adjustment

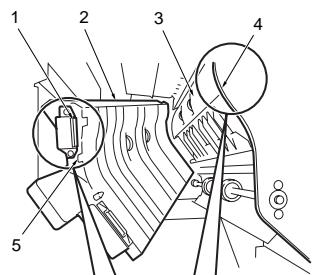
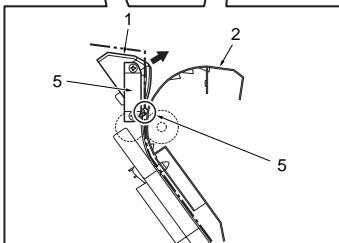


Step	Operation
1	<p>Make a copy in the double sided - single sided copy mode, then check the skew of the original. (Either pattern A or B)</p> <p>Image</p> <p>Copy paper</p> <p>Paper skew pattern A Paper skew pattern B</p>
2	Open the Jam access cover.
3	Loosen the set screw and release the R range adjustment plate.
4	<p>Move the R range adjustment plate one calibration in the direction below according to the paper skew pattern.</p> <p>For skew in pattern A: Move the R range adjustment plate to left side.</p> <p>For skew in pattern B: Move the R range adjustment plate to right side.</p>
5	Repeat steps 2 to 4 until the original skew is within specified range (0.5 % or less).

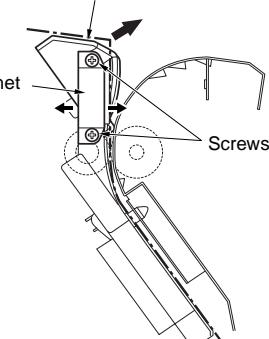
Specified range: Paper skew $\pm 0.5\%$ or less
(Paper skew in the paper feed direction)

[12] FNS Adjusting the magnets on the by-pass conveyance guide plate

1. Tool
 - Screwdriver (Phillips)
2. Adjustment method
- a. Preparation

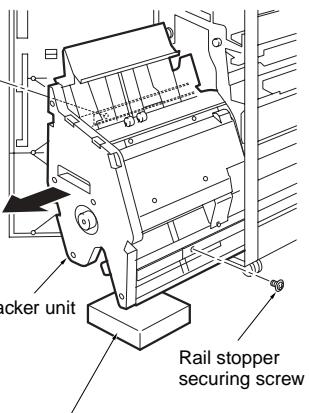
Step	Operation
1	Open the front door.
2	<p>When the magnet on the by-pass conveyance guide plate is stuck to the front panel, check whether the stopping piece of the plate makes contact with the conveyance guide plate /L.</p>   <p>1. Magnet 2. By-pass conveyance guide plate 3. Conveyance guide plate /L 4. Front panel 5. Cushioning rubber</p>
3	If the stopping piece of the by-pass conveyance guide plate does not make contact with the conveyance guide plate /L, perform the following adjustment:

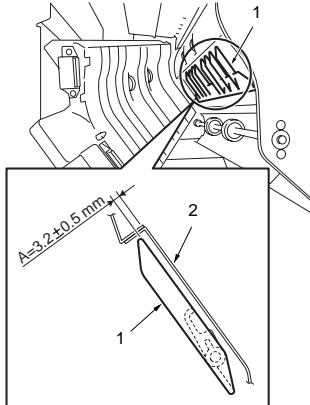
b. Adjustment

Step	Operation
1	Loosen the two screws securing the magnet.
2	Adjust the by-pass conveyance guide plate to the direction indicated by the arrow, and press it against the conveyance guide plate /L.
3	<p>Adhere the magnets to the front panel and retighten the magnet securing screws.</p> 
4	Close the front door.

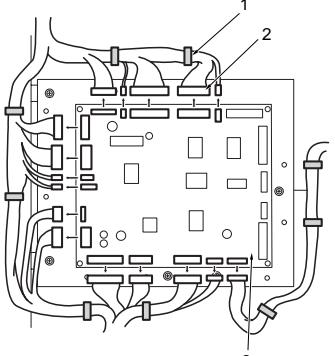
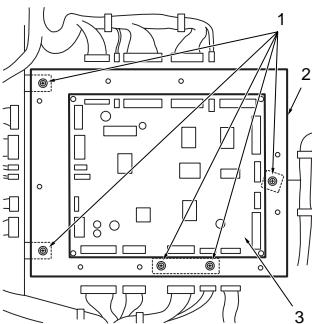
[13] FNS adjusting the by-pass gate

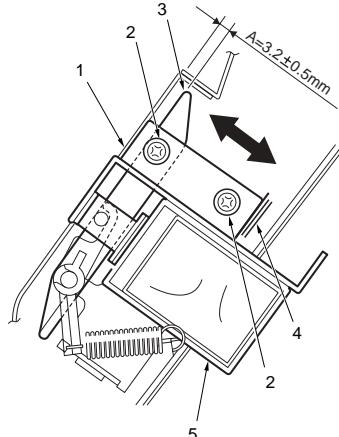
1. Tool
 - Screwdriver (Phillips)
 - Scale
2. Adjustment method
- a. Preparation

Step	Operation
1	Open the front door.
2	Draw out the stacker unit.
3	<p>Remove the 2 screws securing the rail stopper, and pull out the stacker unit even further.</p> <p>Caution: To prevent the finisher from toppling over, place a board or the like to support the pulled-out unit.</p> 
4	Open the by-pass conveyance guide plate.

Step	Operation
5	<p>When the by-pass gate (SD705) is OFF, check the gap between the by-pass gate and the by-pass conveyance plate is within the standard value.</p> <p>Specifications: $A=3.2 \pm 0.5 \text{ mm}$</p> 
6	If the gap is not within the standard value, perform the following adjustment.

b. Adjustment

Step	Operation
1	<p>Take off the rear cover.</p> <p>Remove all cable assembly from the connectors and clamps connecting to FNS CB (FNS control board).</p>  <p>1. Clamp 2. Connector 3. FNS control board (FNS CB)</p>
2	<p>Remove five screws and detach the FNS control board (FNS CB) together with its bracket.</p>  <p>1. Screw 2. Bracket 3. FNS control board (FNS CB)</p>
3	

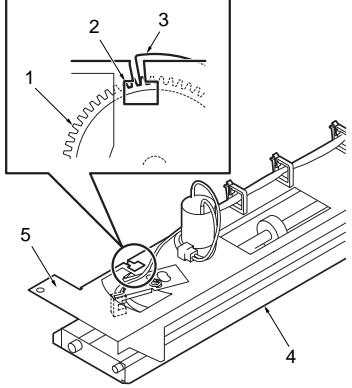
Step	Operation
4	<p>Loosen two screws securing the by-pass gate SD (SD705) and adjust the position of SD705 so that the gap between the by-pass gate and by-pass conveyance plate becomes within the standard value.</p>  <p>1. By-pass conveyance plate 2. Screw 3. By-pass gate 4. Mark 5. By-pass gate SD (SD705)</p>
5	<p>Reinstall the parts in the opposite sequence to removal.</p>

[14] FNS Adjusting the Shift Position

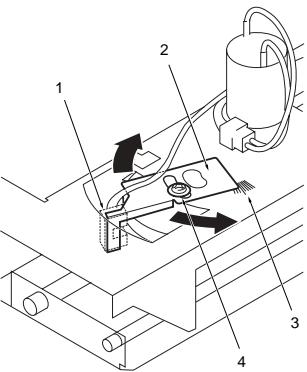
1. Tool
 - Screwdriver (Phillips)

2. Adjustment method

- a. Preparation

Step	Operation
1	Remove the following parts. <ul style="list-style-type: none"> • Top cover or option PI (if installed) • Top cover /2
2	Power on the main body and drive the roller shift (M702) using the 47 mode (code 75-2/75-3).
3	At the both HP (home position) and shift position, check whether the edge of the actuator for the slide gear fits into the notched hole of the slide stay.  1. Slide gear 2. Notch 3. Actuator 4. Shift unit 5. Slide stay
4	If the edge of the actuator for the slide gear does not fit into the notched hole of the slide stay, perform the following adjustment:

- b. Adjustment

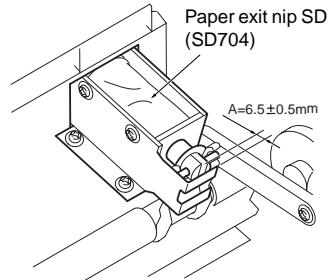
Step	Operation
1	Loosen the screw fastening the bracket for the roller shift HP PS (PS718), and shift the bracket to adjust the amount of discrepancy using the mark as a guide.  1. Shift HP PS (PS718) 2. Bracket 3. Mark 4. Screw
2	When the position is confirmed, fasten the screw securing the bracket.
3	Reassemble in the opposite sequence to removal.

[15] FNS Adjusting the paper exit solenoid

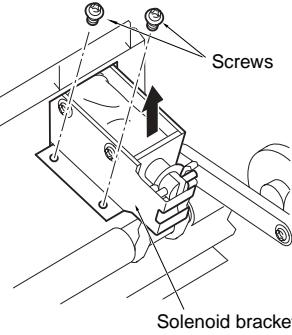
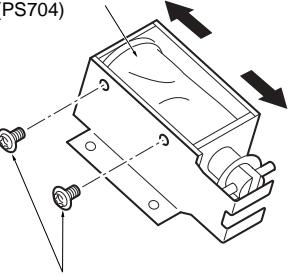
1. Tool
 - Screwdriver (Phillips)
 - Scale

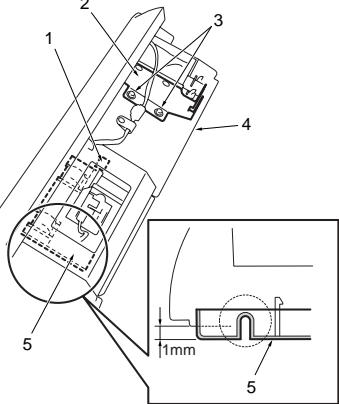
2. Adjustment method

- a. Preparation

Step	Operation
1	Remove the following parts. <ul style="list-style-type: none"> • Top cover /1 or option PI (if installed) • Top cover /2 • Rear cover
2	Power on the main body, and turn on the paper exit solenoid (SD704) using the 47 mode (code 75-31).
3	With the paper exit solenoid (SD704) ON, check whether the gap between the plunger of solenoid and the stopper of the bracket is within the spec value. Spec value: $A=6.5 \pm 0.5 \text{ mm}$ 
4	If the gap is out of spec, perform the following adjustment.

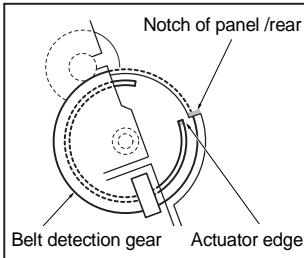
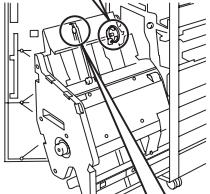
- b. Adjustment

Step	Operation
1	Remove two screws securing the solenoid bracket and remove the solenoid together with the bracket. 
2	Loosen the 2 screws holding the solenoid, move the solenoid to adjust its position, and retighten the screws. Spec value: $A = 6.5 \pm 0.5 \text{ mm}$ 

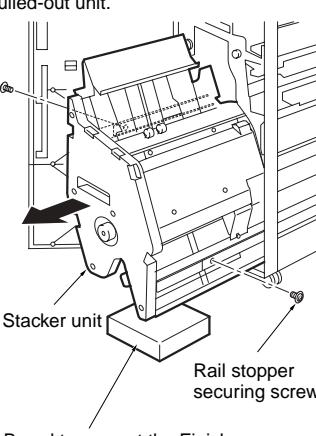
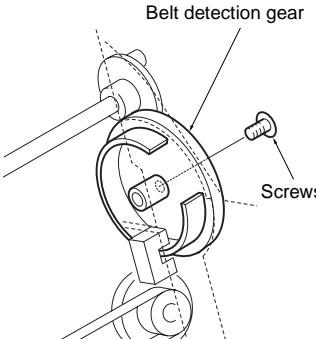
Step	Operation
3	<p>Place the solenoid to its original position, and tighten the screw securing the solenoid bracket at the position where the paper exit guide makes contact with the cushioning rubber of the paper exit guide stay.</p> <p>Caution: Make sure that the difference in height between the paper exit guide and the paper exit guide stay is 1mm and greater.</p>  <p>1. Stopping rubber 2. Solenoid bracket 3. Screws 4. Paper exit guide stay 5. Paper exit guide</p>
4	Reassemble in the opposite sequence to the removal.

[16] FNS Adjusting the mount location of the paper exit arm

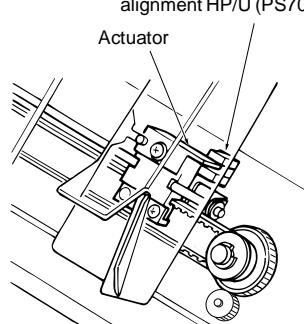
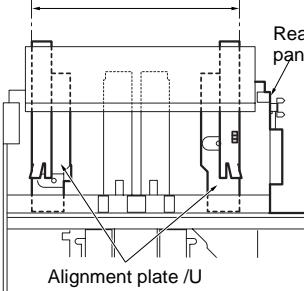
1. Tool
 - Screwdriver (Phillips)
2. Adjustment method
- a. Preparation

Step	Operation
1	Open the front door and pull out the stacker unit.
2	<p>When aligning the actuator edge of the belt detection gear with the notch of panel/rear, check whether the top surface of paper exit belt arm is positioned in the middle of the two marks.</p> 
3	 <p>Top surface of paper exit belt arm Marks</p> <p>Perform the adjustment if it is out of spec.</p>

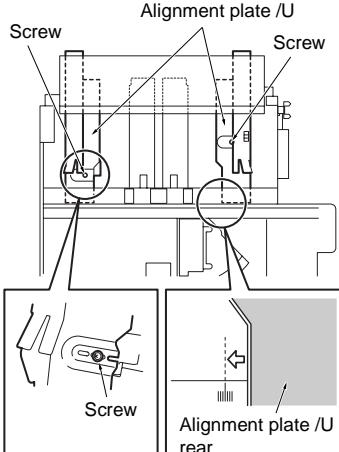
b. Adjustment

Step	Operation
1	<p>Remove the two screws securing the rail stopper and pull out the stacker unit even further.</p> <p>To prevent the Finisher from toppling over, place a board or the like to support the pulled-out unit.</p> 
2	<p>Remove the screw of the belt detection gear, align the paper exit belt arm with the specified position, and align the detection gear with the specified position to secure it.</p> 
3	Reassemble in the opposite sequence to the removal.

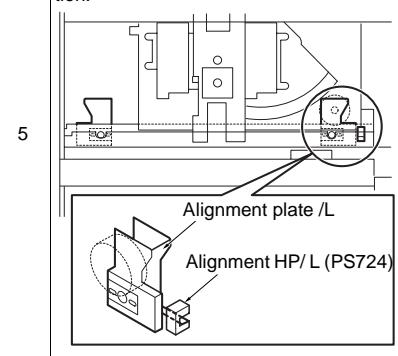
[17] FNS Adjusting the mount location of the alignment plates / U

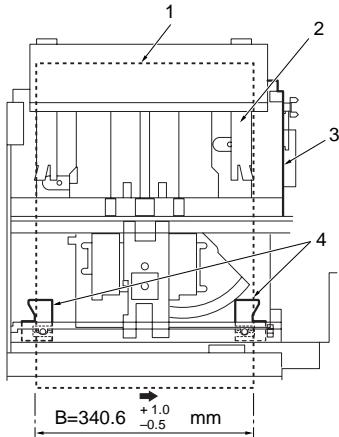
1.	Tool
	<ul style="list-style-type: none"> Screwdriver (Phillips) Scale
2.	Adjustment method
a.	Preparation
Step	Operation
1	Power on the main body, then power it off after the Finisher initial operation is finished.
2	Open the front door and pull out the stacker unit.
3	<p>Check whether the actuator of the alignment HP/U (PS708) is aligned with the home position.</p> 
4	<p>Check whether the distances A and B for the alignment plate /U are within specification.</p> <p>Spec values: A=340.6 $^{+1.0}_{-0.5}$ mm (within) A=340.6 $^{+1.0}_{-0.5}$ mm</p> 
5	If they are out of spec, perform the following adjustment:

b. Adjustment

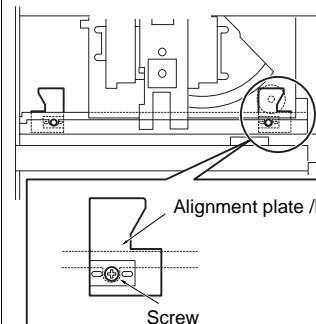
Step	Operation
1	<p>After loosening two screws to position the rear side of the alignment plate/U to the center or marking lines, adjust the location of its front side so that the mounting location is within specification.</p> 

[18] FNS Adjusting the mount location of the alignment plates / L (FN-6 only)

1. Tool
 - Screwdriver (Phillips)
 - Scale
 2. Adjustment method
 - a. Preparation
- | Step | Operation |
|------|--|
| 1 | Make sure that "Adjusting the mount location of the alignment plates / U" is finished. |
| 2 | Power on the main body, drive the motor(s) using the following codes in the 47 mode, and then power the machine off. <ul style="list-style-type: none"> • Code 75-8: Alignment /U (M705) HP search • Code 75-21: Alignment /L (M716) HP search • Code 75-40: Stopper (M718) positioning shift (larger than A4R) |
| 3 | Open the front door and pull out the stacker unit. |
| 4 | Take off the stapler unit cover. |
| 5 | Check whether the actuators for the alignment HP/U (PS705) and the alignment HP/L (PS724) are aligned with the home position.  |

Step	Operation
6	<p>Load paper sized A4R or larger, put the paper against the alignment plate /U (rear) and the alignment plate /L (rear) and check whether the paper is plumb. In addition, check whether the distances B for the alignment plate /L are within specification.</p> <p>Spec values:B=340.6 $^{+1.0}_{-0.5}$ mm (within)</p>  <p>1. Stopping rubber 2. Solenoid bracket 3. Screws 4. Paper exit guide stay</p>
7	If they are out of spec, perform the following adjustment:

b. Adjustment

Step	Operation
1	<p>Loosen the two screws and perform the adjustment so that the mount location of the alignment plate /L are within specification.</p> 

[19] FNS Adjusting the stapling position (Flat stapling)

Caution: Do not use hands to move stapler unit to horizontal direction.
(Otherwise the belt and the gear teeth skipping may occur.

1. Tool
 - Screwdriver (Phillips)
 - Scale

2. Adjustment method

- a. Preparation

Step	Operation
1	<p>Perform the following stapling actually and check whether they are within specification. In the case of flat stapling, check whether the paper edge is parallel to the virtual line running between the staplers.</p> <p>One-corner stapling (at rear) One-point stapling (at front)</p> <p>Flat stapling</p>
2	If they are out of spec or not parallel, perform the following adjustment:

- b. Adjustment

Step	Operation
1	Open the front door and pull out the stacker unit.
2	Take off the stapler unit cover.
3	<p>Loosen the adjustment screws for the clincher /F and Clincher /R and perform adjustment using marks as a guide.</p>
4	Execute stapling to confirm that the stapling is within the specification range.

[20] FNS Adjusting the stapler vertical positioning

Caution: Do not use hands to move stapler unit to horizontal direction.
(Otherwise the belt and the gear teeth skipping may occur.)

1. Tool
 - Screwdriver (Phillips)
 - Jig

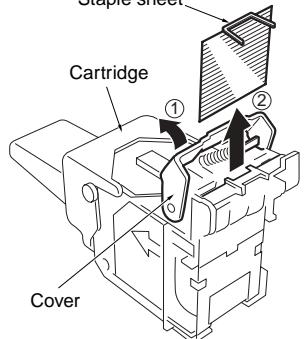
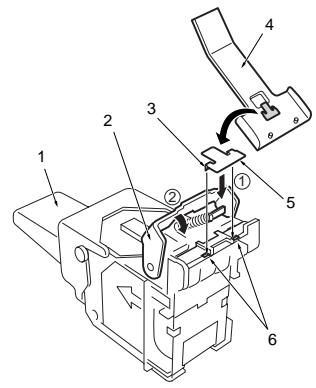
2. Adjustment method

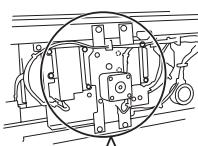
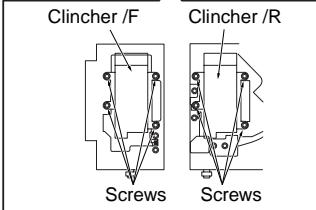
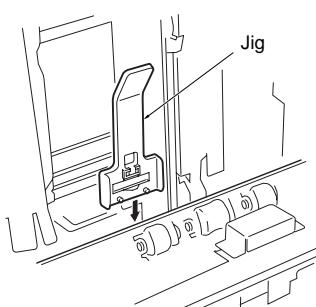
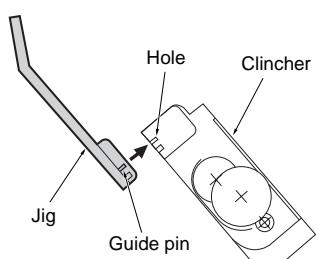
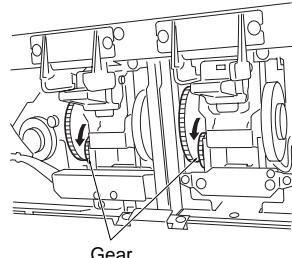
- a. Preparation

Step	Operation
	Execute stapling and check for buckled staple-needles or clinching failure.
	Caution: When replacing or removing a clincher or stapler, perform adjustment after reinstalling.
1	Buckled stapling  Floating stapling  $L=0.7\text{mm or less}$ Height of bent staple-needle  $L=1\text{mm or less}$
2	When any defect described above can be seen, perform the following adjustment:

- b. Adjustment

Step	Operation
1	Open the front door and pull out the stacker unit.
2	Take off the stapler unit cover.

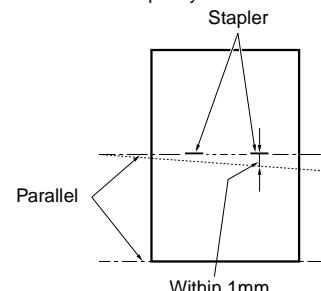
Step	Operation
3	Remove the cartridge, open the cover, and then slide the staple sheet out. 
4	Remove the plate from the jig, install it so that its hooks fit the hook holes, and then close the cover.  <ul style="list-style-type: none"> 1. Cartridge 2. Cover 3. Hook 4. Jig 5. Plate 6. Hook holes

Step	Operation
5	<p>Loosen the four screws for each clincher.</p>  <p>Clincher /F Clincher /R</p> 
6	<p>Insert the two guide pins of the jig in the hole of the clincher.</p> <p>Caution: The positioning portion of the jig need not be engaged with the clincher completely.</p>  
7	<p>Rotate the stapler gears downward. Adjust the clincher position so that the plate on the cartridge fits smoothly into the groove on the jig. Rotate the stapler gear further to fit the plate in the groove in the jig and the jig in the clincher unit completely.</p>  <p>Gear</p>
8	Tighten the four screws for each clincher.
9	<p>Rotate the stapler gears upwards to remove the jig.</p> <p>Caution: When removing the jig, be careful not to break the myler of the clincher.</p>
10	Remove the cartridge, detach the plate, insert the staple plate slide out on step3, and place the cartridge to its original position.
11	Check that the stapler operates properly.

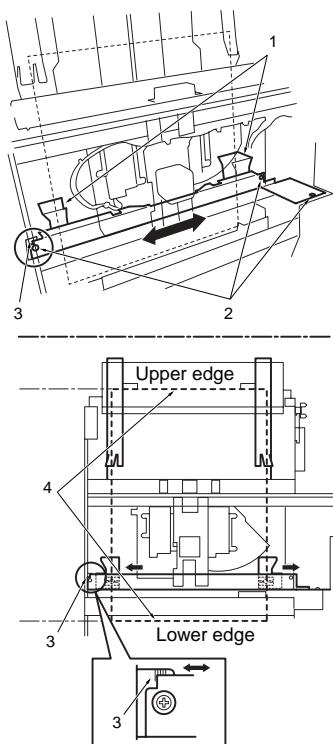
[21] FNS Adjusting the stapling position (stitch-and-fold) (FN-6 only)

Caution: Do not use hands to move stapler unit to horizontal direction.
(Otherwise the belt and the gear teeth skipping may occur.

1. Tool
 - Screwdriver (Phillips)
2. Adjustment method
- a. Preparation

Step	Operation
1	<p>Execute stapling and check whether the paper edge is parallel to the virtual line connecting the two staples or whether the amount of discrepancy is within specification.</p> <p>Spec value: within 1mm for the amount of discrepancy</p> 
2	If the amount of discrepancy for the booklet is out of spec, perform the following adjustment:

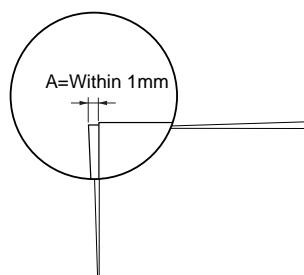
b. Adjustment

Step	Operation
1	Make sure that the "Adjusting the mount location of the alignment plates / U" and "Adjusting the mount location of the alignment plates / L" are finished.
2	Open the front door and pull out the stacker unit.
3	Take off the stapler unit cover.
4	<p>Loosen the three screws securing the alignment plate and adjust it using the mark as a guide.</p> 
5	After the adjustment, retighten the three screws, execute stapling, and then check that the aligned position is within the specification range.

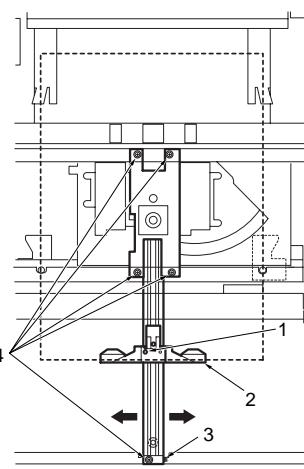
[22] FNS Adjusting the angle of the folding stopper (FN-6 only)

Caution: Do not use hands to move stapler unit to horizontal direction.
(Otherwise the belt and the gear teeth skipping may occur.

1. Tool
 - Screwdriver (Phillips)
2. Adjustment method
- a. Preparation

Step	Operation
1	<p>Execute stapling using A3 paper and check whether the fold side discrepancy for A3 paper is within the limit. Limit: A= within 1mm</p> 
2	If the amount of discrepancy is out of specification, perform the following adjustment:

b. Adjustment

Step	Operation
1	Open the front door and pull out the stacker unit.
2	Take off the stapler unit cover.
3	<p>Loosen the five screws securing the folding stopper and adjust it using the mark as a guide.</p> 
4	After the adjustment, retighten the five screws and execute stapling to check that the amount of discrepancy is within the specified limit.

[23] FNS Adjusting the folding force (FN-6 only)

1. Tool
 - Flat-nose pliers
2. Adjustment method
- a. Preparation

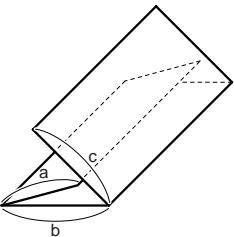
Step	Operation
1	If necessary, change the force and pressure of the folding rollers.

- b. Adjustment

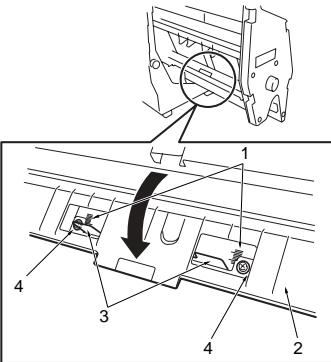
Step	Operation
1	Remove the rear cover.
2	Open the front cover and pull out the stacker unit.
3	Remove the stacker unit cover.
4	<p>Change the mounting places of the two pressure springs for each of the front and rear.</p> <p>Caution: The four pressure springs should be hooked on the hole with the same character.</p>

[24] FNS Adjusting the three-holding positions (FN-6 only)

1. Tool
 - Screwdriver (Phillips)
2. Adjustment method
- a. Preparation

Step	Operation															
1	Make sure that the "Adjusting the angle of the folding stopper" is finished.															
2	<p>Execute three-holding and check whether the three-holding positions are within specification.</p>  <table border="1"> <thead> <tr> <th>Folding positions</th> <th>Reference value</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td>a</td> <td>A4R 8.5x11</td> <td>±2</td> </tr> <tr> <td>b</td> <td>93</td> <td>86.4</td> </tr> <tr> <td>c</td> <td>102</td> <td>97</td> </tr> <tr> <td>c</td> <td>102</td> <td>97</td> </tr> </tbody> </table> <p>Unit:mm</p>	Folding positions	Reference value	Specification	a	A4R 8.5x11	±2	b	93	86.4	c	102	97	c	102	97
Folding positions	Reference value	Specification														
a	A4R 8.5x11	±2														
b	93	86.4														
c	102	97														
c	102	97														
3	If the three-holding positions are out of spec, perform the following adjustment:															

b. Adjustment

Step	Operation
1	Power on the main body. Use "7: Three-hold positions adjustment" from "6: Finisher adjustment" on the 36 Mode, adjust the first folded line (reference value a), and perform three-holding.
2	When the first folded line becomes within the spec value, open the front door and pull out the stacker unit.
3	<p>Open the three-holding guide plate, loosen the two screws securing the three-holding stoppers, and adjust the stopper positions using the mark as a guide.</p>  <ol style="list-style-type: none"> 1. Marks 2. Three-folding guide plate 3. Three-folding stopper 4. Screw
4	After the adjustment, retighten the two screws and execute three-holding to check that the three-holding positions are within the specification.

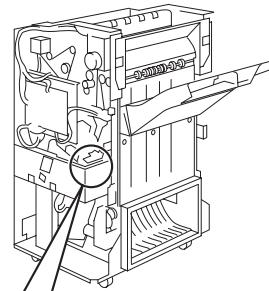
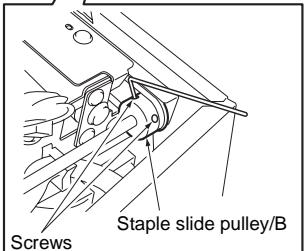
[25] FNS Stapler Driver Belt Position Adjustment

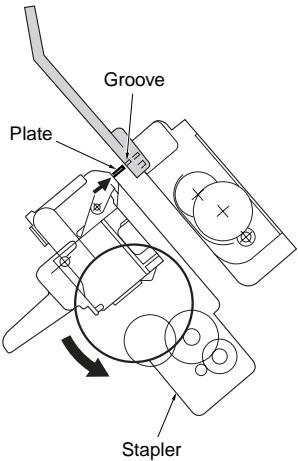
Caution: Stapler drive belt position adjustment is only performed when the positions of drive belt and gear are misaligned when following other adjustment procedures.

1. Tool
 - Screwdriver (Phillips)
 - Stapler PS jig
 - Hexagonal wrench
2. Adjustment method
 - a. Preparation

Step	Operation
1	Remove the following parts: <ul style="list-style-type: none"> • Rear cover • Stapler unit cover
2	Insert the stacker unit.

- b. Adjustment

Step	Operation
1	Loosen two M3 screws of the staple slide pulley/B from the backside.  

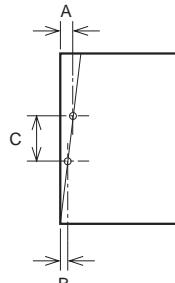
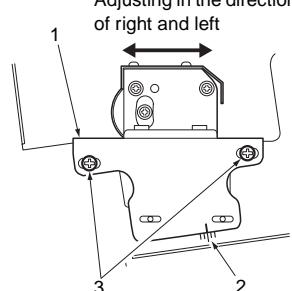
Step	Operation
2	Move the stapler/clincher to the center at the same time until it stops at the bearing. Caution: Make sure to move them at the same time, otherwise, the flat-stapling stopper may fracture at the stapler plate.
3	Install the stapler PS jig to the stapler and clincher/R, and adjust the horizontal position of the stapler and the clincher. Caution: Do not loosen the screws on the clincher. In order to adjust the position, move the stapler /R or the clincher/R slightly toward the horizontal direction. 
4	Insert the stacker while the jig is installed (that is, when the plate and the jig are completely locked with each other).
5	Tighten two screws of the staple slide pulley/B from the backside.
6	Pull out the stacker unit and remove the jig. Then, check the staple for the following movements: <ul style="list-style-type: none"> • Stapling at one position/rear • Stapling at one position/front • Stapling at two positions
7	Install the rear cover and the stapler cover when the adjustment is completed.

[26] PK Adjusting the tilt of the punch hole position (PK-2 only)

1. Tool
 - Screwdriver (Phillips)
 - Scale
2. Adjustment method
- a. Preparation

Step	Operation
1	Check the following items: <ul style="list-style-type: none"> • The finisher is connected to the main body. • The main body is loaded with the paper based on the punch specifications.
2	Check the skew of output paper in advance. <ul style="list-style-type: none"> • Slide the side guide plate and the rear guide plate for the main body's feed tray, and align the paper loaded on the main body's tray. • Check the skew by using the platen copy or adjustment mode.
3	To check the tilt of the punch hole position, make a sample copy in the punch mode.
4	Make three copies each in single side copy mode and double side copy mode with the punch mode to check the skew.

b. Adjustment

Step	Operation
1	Measure the position of the sampled punch holes to check the tilt of the position.  <p>Tilt of the punch hole position: A-B (Difference in position of the two punch holes)/C (Distance of hole pitch)</p>
2	Open the front cover.
3	Loosen the two adjustment screws of PK.
4	Using the mark scale as a guide, move the punch unit horizontally by the amount of tilt for the punch hole position. 1 scale: 0.5 %  <p>Adjusting in the direction of right and left</p> <ul style="list-style-type: none"> 1. Adjustment side of punch unit 2. Mark 3. Adjustment screws
5	Retighten the screws.
6	Make a sample copy of punch mode and recheck the tilt of the punch hole position.

[27] PK Adjusting the tilt of the punch hole position (PK-5 only)

1. Tool

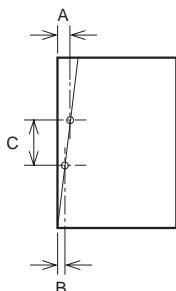
- Screwdriver (Phillips)
- Scale

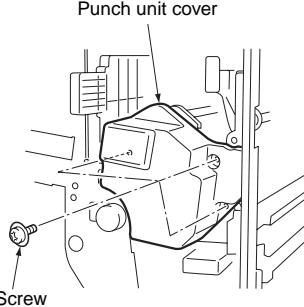
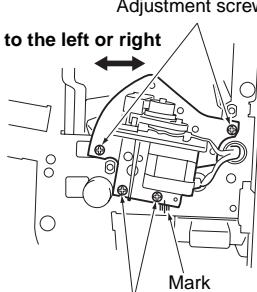
2. Adjustment method

a. Preparation

Step	Operation
1	<p>Check the following items:</p> <ul style="list-style-type: none"> • The finisher is connected to the main body. • The main body is loaded with the paper based on the punch specifications.
2	<p>Check the skew of output paper in advance.</p> <ul style="list-style-type: none"> • Slide the side guide plate and the rear guide plate for the main body's feed tray, and align the paper loaded on the main body's tray. • Check the skew by using the platen copy or adjustment mode.
3	To check the tilt of the punch hole position, make a sample copy in the punch mode.
4	Make three copies each in single side copy mode and double side copy mode with the punch mode to check the skew.

b. Adjustment

Step	Operation
1	<p>Measure the position of the sampled punch holes to check the tilt of the position.</p>  <p>Tilt of the punch hole position: A-B (Difference in position of the two punch holes)/C (Distance of hole pitch)</p>
2	Open the front cover.

Step	Operation
3	<p>Remove the punch unit cover by removing three screws</p> 
4	Loosen the four adjustment screws of PK.
5	<p>Using the mark scale as a guide, move the punch unit horizontally by the amount of tilt for the punch hole position. 1 scale: 0.5 %</p> 
6	Retighten the screws.
7	Reinstall the punch unit cover.
8	Make a sample copy of punch mode and recheck the tilt of the punch hole position.

[28] PK Adjusting the punch hole vertical position (PK-2 only)

Caution1: Perform this adjustment after finishing the adjustment for the tilt of the punch hole position.

Caution2: Complete the PK adjusting the punch hole vertical position feeding the paper from the by-pass tray first. Then, perform this adjustment feeding paper from the tray that is most frequently used.

Caution3: If there is a difference in the punch hole vertical position, perform the centering adjustment for the trays of main body or PI.

1. Tool

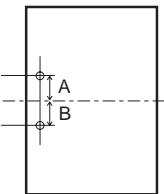
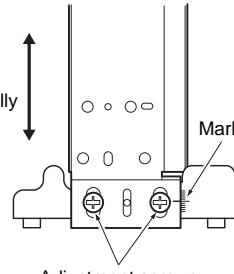
- Screwdriver (Phillips)
- Scale

2. Adjustment method

a. Preparation

Step	Operation
1	Check the following items: <ul style="list-style-type: none"> • The finisher is connected to the main body. • The main body is loaded with the paper based on the punch specifications.
2	Check the skew of output paper in advance. Slide the side guide plate and the rear guide plate for the main body's feed tray, and align the paper loaded on the main body's tray.
3	Make three copies each in single side copy mode and double side copy mode with the punch mode to check the position of the holes.

b. Adjustment

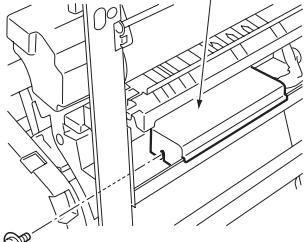
Step	Operation
1	Fold the sample at the middle of the paper, check the position of each punch hole, and calculate the dimension to be adjusted.  Specified limit: $(A-B) / 2$ (Error of position of the two punch holes)/2
2	Reference: For adjustment of the punch hole vertical position, the dimension of the punch hole vertical position can be adjusted by $\pm 5\text{mm}$. Adjusting the hole pitch is not allowed.
3	Open the front cover.
4	Loosen the two adjustment screws for PK. Using the mark scale as a guide, move the punch unit vertically to 1/2 the distance of the above dimension. 
5	Retighten the screws.
6	Make a sample copy of punch mode and recheck the discrepancy of the punch hole vertical position.

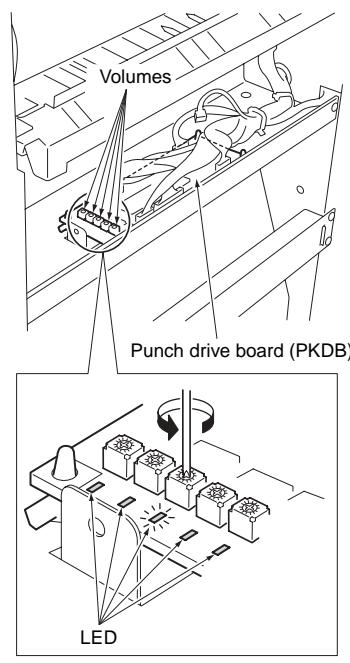
[29] Sensitivity adjustment for the PK paper edge sensor (PK-5 only)

1. Tool
 - Screwdriver (Phillips)
 - Clock driver (Phillips)
2. Adjustment method
 - a. Preparation

Step	Operation
1	Check that the finisher is connected to the main body.

- b. Adjustment

Step	Operation
1	Open the front door of the finisher.
2	<p>Remove the punch drive board cover by removing one screw.</p>  <p>Punch drive board cover</p> <p>Screw</p>
3	Power on the main body.

Step	Operation
4	<p>Using the mark scale as a guide, move the punch unit vertically to 1/2 the distance of the above dimension.</p> 
5	Perform the procedure of step 4 for all five volumes.
6	Power off the main body after completing the adjustment.
7	Reinstall the punch drive board cover.
8	Close the front door of the finisher.

[30] PI Centering Adjustment

Caution1: PI Centering adjustment must be performed on the upper tray first, then on the lower tray.

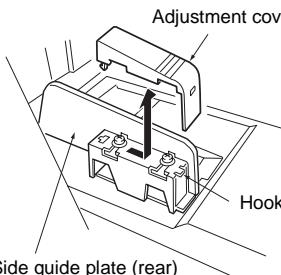
When it is necessary to slide the side guide plate (rear) a lot, perform step 11 before step 3 and subsequent procedures

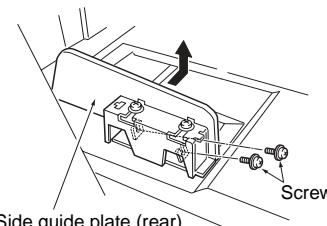
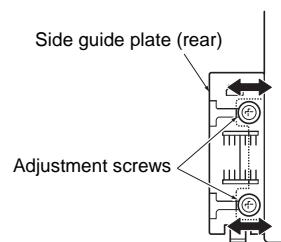
Caution2: When tightening two screws of the side guide plate (rear), be careful not to tighten them too much. (Tightening torque: less than 5 kg/cm)

1. Tool
 - Screwdriver (Phillips)
 - Scale
2. Adjustment method
- a. Preparation

Step	Operation
1	Check that PK adjusting the punch hole vertical position has been completed.
2	Perform Tray 1/2/3 centering adjustment.
3	Feed the three sheets from PI with the punch mode.
4	Check the position of each punch hole on the three sheets.

- b. Adjustment

Step	Operation
1	Release the hook and remove the adjustment cover of the side guide plate (rear). 

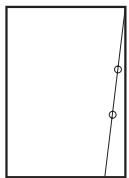
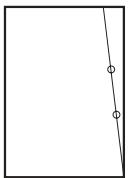
Step	Operation
2	When adjusting for the lower tray, remove two screws and slide rightward to remove the side guide plate (rear). 
3	Loosen two adjustment screws securing the side guide plate (rear), and slide it by the twice the difference. (ie: If there is 1.5mm difference in direction of rear side, slide by 3 mm to rear side.) 1 scale : 2 mm 
4	Fasten the two adjustment screws securely to fix the side guide plate (rear).
5	In case of the lower tray, install the side guide plate (rear).
6	Set a sheet on the tray and fit the side guide plate (rear) to the sheet to check that the side guide plate (rear) is parallel to the sheet.
7	Feed the three sheets from PI with the punch mode.
8	Check the position of each punch hole.
9	Repeat step 2 to 8 until the difference of the holes is improved.
10	Install the adjustment cover to the side guide plate (rear).
11	Set A4R size paper to the tray and perform the cover sheet tray size adjustment in 36 mode.

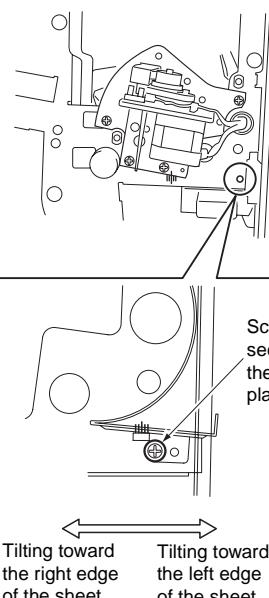
[31] Adjusting the tilt of PI (when PK punch is used)

1. Tool
 - Screwdriver (Phillips)
 - Scale
2. Adjustment method
 - a. Preparation

Step	Operation
1	Check the following items: <ul style="list-style-type: none"> • PI is connected to FNS. • The tray of PI is loaded with paper.
2	Check the tilt of output paper in advance. <ul style="list-style-type: none"> • Feed 3 sheets from PI with the Punch mode selected to check the tilt of punch holes.
3	Loosen one screw securing the guide plate.

- b. Adjustment

Step	Operation
1	Open the front door of the finisher. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Tilting toward the right edge of the sheet</p> </div> <div style="text-align: center;">  <p>Tilting toward the left edge of the sheet</p> </div> </div>
2	Open the FNS front cover.
3	Loosen one screw securing the guide plate.

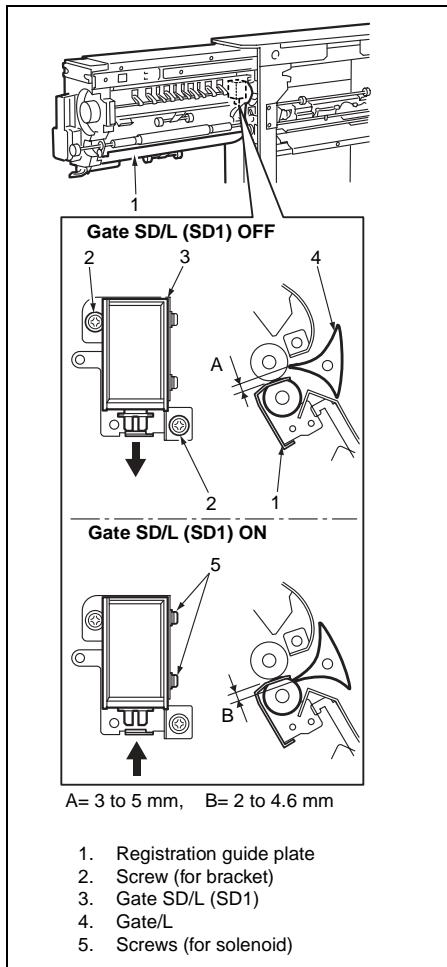
Step	Operation
	Using the mark as a guide, move the guide plate laterally by the amount of tilt in the position of punch holes.
4	 <p>Screw securing the guide plate</p> <p>Tilting toward the right edge of the sheet Tilting toward the left edge of the sheet</p>
5	Retighten the screw securing the guide plate.
6	Repeat steps 1 to 5 until the amount of tilt in the position of punch holes is improved.

[32] Adjusting the Paper-Path Switching Solenoid (ZK-2 only)

1. Tools

- Screwdriver (Phillips)

2. Adjustment Method

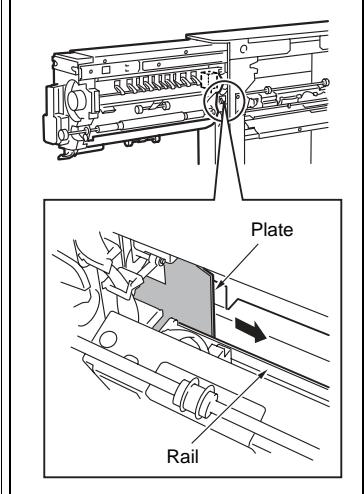


Step	Operation
1	Open the front door of FNS, remove the front cover of ZK-2 (three screws), and remove ZK-2 from the main body.
2	Remove the AC cord and the rear cover (four screws).
3	Pull out the z-folding/conveyance unit. Remove the two screws from the rail and further draw out the unit.
4	Loosen two screws securing the solenoid bracket.
5	Make sure that the gate solenoid/L (SD1) is OFF, and adjust the position of the solenoid bracket so that the gap between the gate tip and the registration guide plate is within the specification range. Fasten the two screws. Spec range: 3 to 5 mm (viewing)
6	Loosen two screws securing the solenoid.

Make sure that the gate solenoid/L (SD1) is ON, and adjust the position of the solenoid bracket so that the gap between the gate tip and the registration guide plate is within the specification range. Fasten the two screws.
Spec range: 2 to 4.6 mm
* The plunger must operate smoothly when the solenoid is turned ON or OFF.
Reassemble in the opposite sequence to removal.

Note: The conveyance unit must be inserted so that the plate on the conveyance unit (see the figure below) is positioned in side the rail on the enclosure.

7

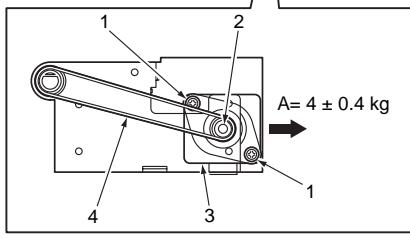
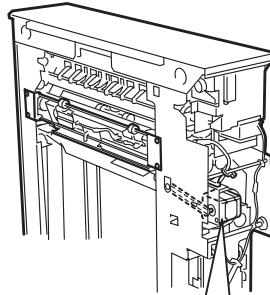


[33] Adjusting the Tension of the Punch Shift Timing Belt (ZK-2 only)

1. Tools

- Screwdriver (Phillips)
- Tension gauge or spring balance

2. Adjustment Method



1. Screw
2. The tension of the timing belt must be measured at the root of the punch shift motor shaft.
3. Punch shift motor (M5)
4. Punch shift timing belt

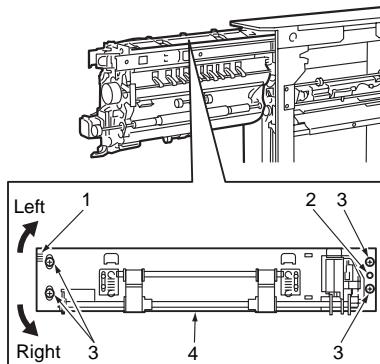
Step	Operation
1	Remove the ZK from the main body.
2	Remove the four screws to remove the rear cover.
3	Loosen the two screws holding the punch shift motor (M5).
4	<p>Use a tension gauge or a spring balance to measure the tension at the A point. When a specification value is observed, tighten the screws. Spec value: $A = 4 \pm 0.4\text{kg}$</p> <p>Note: The tension must be measured at the root of the motor shaft. Otherwise, the measuring operation may cause the shaft to bend.</p>
5	Reinstall the rear cover using four screws.

[34] Adjusting the 1st Folding Skew (ZK-2 only)

1. Tools

- Screwdriver (Phillips)

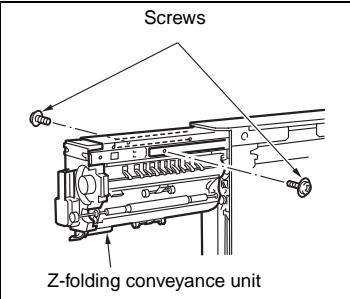
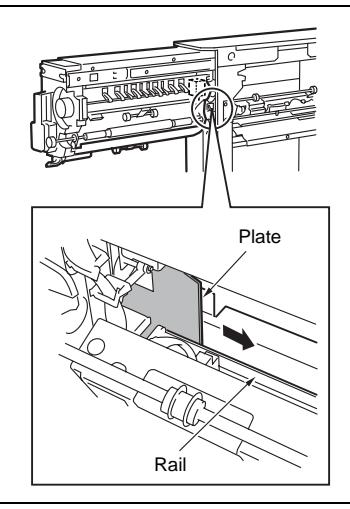
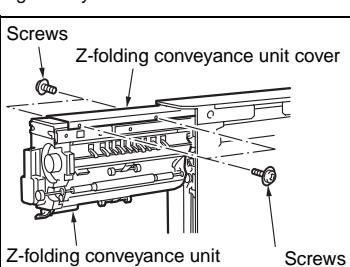
2. Adjustment Method



1. Ticks
2. Supporting point
3. Screw
4. 1st stopper assembly

Step	Operation
1	Set A3 paper into the tray.
2	<p>Set the original chart and make a copy of it. Check the copy for a possible folding skew. Spec range: within 0.5 mm</p> <p>1st folding 0.5 mm or less 0.5 mm or less Skew pattern A Skew pattern B</p> <p>If the folding skew is outside the spec range, adjust according to the instructions described in the following steps.</p>
3	Open the front door of the FNS.

ADJUSTMENT

<p>4 Pull out the z-folding/conveyance unit. Remove two screws from the rail and further draw out the conveyance unit.</p>  <p>Screws</p> <p>Z-folding conveyance unit</p>	<p>Reassemble in the opposite sequence to removal.</p> <p>Note: The conveyance unit must be inserted so that the plate on the conveyance unit (see the figure below) is positioned in side the rail on the enclosure.</p>  <p>11</p> <p>Plate</p> <p>Rail</p>
<p>5 Remove four screws to remove the z-folding/conveyance unit cover.</p>  <p>Screws</p> <p>Z-folding conveyance unit cover</p> <p>Z-folding conveyance unit</p> <p>Screws</p>	
<p>6 Loosen four screws securing the 1st folding stopper assembly.</p>	
<p>7 Make adjustments by moving the 1st stopper assembly right or left using the ticks for reference. Skew pattern A: Move the 1st stopper assembly to the left. Skew pattern B: Move the 1st stopper assembly to the right.</p>	
<p>8 Temporarily tighten four screws holding the 1st stopper assembly, and put the conveyance unit into the basis position. Make a copy of the adjustment chart to check for 1st folding skew.</p>	
<p>9 Repeat Steps 6 to 8 until the 1st folding skew falls within the spec range (0.5 mm or less).</p>	
<p>10 Tighten firmly four screws on the 1st stopper assembly.</p>	

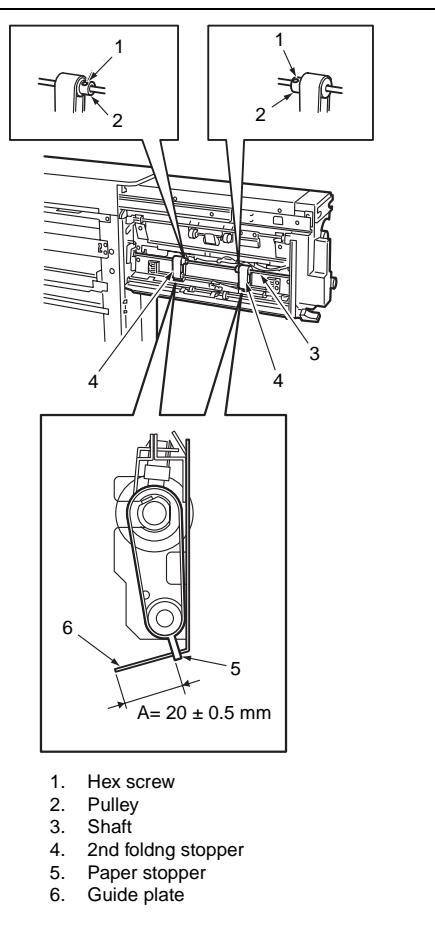
[35] Adjusting the Position of the 2nd Folding Stopper (ZK-2 only)

Note: This adjustment affects the 2nd folding skew. Therefore, first complete this adjustment and then proceed to the [15] Adjusting the 2nd Folding Skew section.

1. Tools

- Screwdriver (Phillips)
- Hex wrench

2. Adjustment Method



Step	Operation
1	Set paper into the tray and make a copy (required to place the paper stopper at its HP position).
2	Open the front door of the FNS and draw out the conveyance unit.
3	Make sure that the distance between the edge of the guide plate and the paper stopper is within the specification range. Spec range: $A = 20 \pm 0.5$ mm If the distance is outside the spec range, adjust according to the instructions described in the following step.
4	Loosen the screws holding the pulleys and adjust the distance by rotating the pulleys. Tighten the screws. Note: Do not rotate the shaft on which the pulleys are attached. If it is rotated for some reason, the stopper is placed out of its HP position. Then perform the procedure again from Step 1.

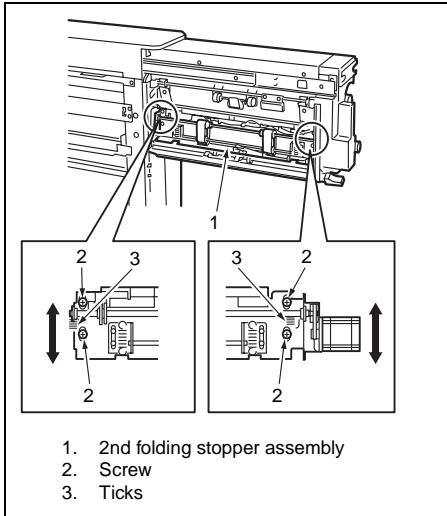
[36] Adjusting the 2nd Folding Skew 2nd Stopper Assembly (ZK-2 only)

Note: Before beginning this operation, complete the adjustment described in the [14] Adjusting the Position of the 2nd folding Stopper section.

1. Tools

- Screwdriver (Phillips)

2. Adjustment Method



3	Open the front door of the FNS and draw out the conveyance unit.
4	Loosen the four screws holding the 2nd stopper assembly.
5	Make adjustments by moving the front or rear side of the 2nd stopper assembly upward using the ticks for reference. Skew pattern A: Move the rear side of the 2nd stopper assembly upward. Skew pattern B: Move the front side of the 2nd stopper assembly upward.
6	Temporarily tighten the four screws holding the 2nd stopper assembly, and put the conveyance unit into the basis position. Make a copy of the adjustment chart to check for 2nd folding skew.
7	Repeat Steps 4 to 6 above until the 2nd folding skew falls within the spec range (2 mm or less).
8	Tighten firmly the four screws on the 2nd stopper assembly.

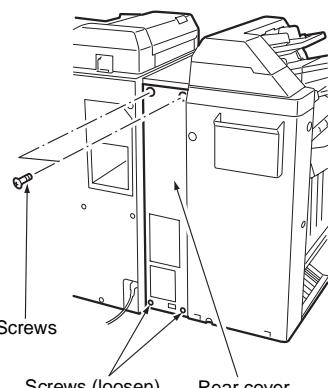
Step	Operation
1	Set A3 paper into the tray. Set the original chart and make a copy of it. Check the copy for a possible folding skew. Spec range: within 2 mm
2	<p>2 mm or less 2 mm or less</p> <p>Skew pattern A Skew pattern B</p> <p>If the folding skew is outside the spec range, adjust according to the instructions described in the following steps.</p>

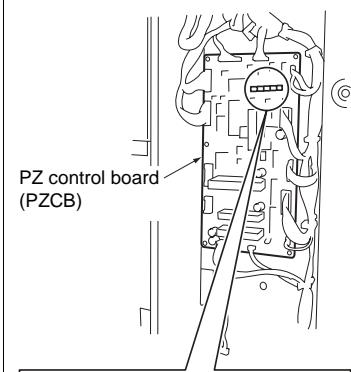
[37] Sensitivity adjustment for the PZ paper edge sensor (ZK-2 only)

1. Tool
 - Screwdriver (Phillips)
 - Precision driver (Phillips)
2. Adjustment method
 - a. Preparation

Step	Operation
1	Check that PZ is connected to the main body.

- b. Adjustment

Step	Operation
1	Loosen two screws in the lower part of PZ rear cover, remove two screws in the upper part, and then remove the rear cover. 
2	Power on the main body.

Step	Operation
3	Using the mark scale as a guide, move the punch unit vertically to 1/2 the distance of the above dimension. 
4	Perform the procedure of step 3 for all five volumes.
5	Power off the main body after completing the adjustment.
6	Reinstall the rear cover.

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3

SERVICE

3 SERVICE

Main Precautions for Maintenance

1. Points to be confirmed before maintenance
Before starting maintenance, ask a user and collect information about troubles that occurred on the machine before the maintenance and the conditions of the machine to grasp key points for the maintenance.
2. Copy sample
Be sure to make copy samples at the start and the end of maintenance for checking images.
3. Drum
 - a) Never expose the drum to the sunlight.
Be also careful not to expose a drum to indoor light as far as possible.
When a drum unit or a drum is out of the machine, never fail to cover it with a drum cover.
 - b) When replacing a drum, toner guide roller or cleaning blade, refer to the Item removing and installing a cleaning blade.
4. When replacing the drum and developer, must perform necessary adjustment by referring to the List of Adjustment Items.
5. After having completed maintenance work, must reset the PM counter (using the 25 mode).
6. When replacing the fixing unit cleaning web, developer, and drum must reset the fixing unit cleaning web counter(using the 36 mode).
7. When replacing a toner cartridge, wait until the toner supply LED on the operation panel flashes before the replacement.

⚠ Caution: Turn the main power switch (SW1) off and pull out the power plug without fail before the work of maintenance.

SERVICE SCHEDULE

[1] Service Schedule

	Service item	Number of copies	Guarantee period (5 years or 5,000,000 copies) x10,000 copies																			Service count			
			0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475			
Main body	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times		
	Periodic check (I)	Every 500,000 copies		●		●		●		●		●		●		●		●		●		●	9 times		
	Periodic check (II)	Every 1,000,000 copies				●				●			●			●						●	4 times		
	Periodic check (III)	Every 2,000,000 copies								●												●	2 times		
	Periodic check (IV)	Every 2,500,000 copies											●											1 times	
	Periodic check (V)	Every 4,000,000 copies																			●			1 times	
RADF EDH	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
	Periodic check (I)	Every 500,000 copies		●		●		●		●		●		●		●		●		●		●		●	9 times
	Periodic check (II)	Every 1,500,000 copies							●					●							●			3 times	
FNS FN-112	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
	Periodic check (I)	Every 1,000,000 copies			●				●			●			●			●					●	4 times	
	Periodic check (II)	Every 2,500,000 copies										●												1 times	
FNS FN-6	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
	Periodic check (I)	Every 1,000,000 copies			●				●			●			●			●				●		4 times	
	Periodic check (II)	Every 2,500,000 copies										●												1 times	
LCT C-403/404	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
	Periodic check (I)	Every 1,000,000 copies				●			●			●			●			●				●		4 times	
	Periodic check (II)	Every 4,000,000 copies																			●			1 times	
P1 Cover Inserter B	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
	Periodic check (I)	Every 500,000 copies		●		●		●		●		●		●		●		●		●		●		9 times	
	Periodic check (II)	Every 1,000,000 copies			●				●			●			●			●			●			4 times	
	Periodic check (III)	Every 3,000,000 copies																●						1 times	
PK PK-2/-5	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
PZ ZK-2	Maintenance	Every 250,000 copies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19 times	
	Periodic check (I)	Every 3,000,000 copies																●						1 times	

[2] Maintenance Items

1. Main body (Every 250,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Preparation	(1) Image check		●				
2	Drum unit	(1) Charging control plate 4024-1006-xx	1				●	
		(2) Charging wire 4024-1020-xx	1				●	
		(3) Charging corona unit (back plate and peripheral section, PCL)		●				
		(4) Charger cleaning base 4024-2486-xx	1				●	
		(5) Charger slide block 4024-2485-xx	1				●	
		(6) Charger cleaning block /U 4024-1007-xx	1				●	
		(7) Resin ring (φ 2) 4014-1750-xx	1				●	
		(8) Charger cleaning block /L 4024-1008-xx	1				●	
		(9) Drum cartridge, bottom plate of the developing unit, toner control sensor, separation claw		●				
		(10) Toner collection screw A		●				
		(11) Toner guide roller *1 4024-1005-xx	1			●	●	Electricity lubricant
		(12) Cleaning blade (36 mode blade setting mode) 4024-1004-xx	1				●	
3	Developing unit	(1) Developing bias armature		●				
		(2) Developer (25 mode counter resetting)	1				●	
		(3) Developing unit		●				
4	Transfer/separation corona	(1) Transfer separation corona unit (front and rear block), guide rail, separation bridge, entrance guide plate, lightning protection sheet, back plate		●				
		(2) Discharge wire 4024-1010-xx	3				●	
		(3) Transfer cleaning assembly 4024-1011-xx	1				●	
		(4) Separation cleaning assembly 4024-1019-xx	1				●	
		(5) Resin ring (φ2) 4014-1750-xx	2				●	
		(6) Transfer presser rubber 4024-3053-xx	3				●	
5	Toner supply	(1) Cartridge holder member		●				

*1 After replacing the toner guide roller, be sure to apply an electricity lubricant on the edge of the guide roller shaft (on power supply pin side).

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
6	Conveyance unit	(1) Conveyance section upper surface		●				
		(2) Conveyance belt		●				
		(3) TSL cover member		●				
7	Registration	(1) Paper dust removing brush		●				
		(2) 2nd paper feed roller		●				
8	Drive section and filter	(1) Ozone filter K 4014-1795-xx	1				●	
		(2) Developing suction filter 4024-2001-xx	1				●	
9	Paper exit unit	(1) Sensor (one section)		●				
		(2) Roller (two sections)		●				
10	ADU	(1) Roller cleaning		●				
		(2) Reverse/exit roller		●				
		(3) ADU reverse roller		●				
		(4) ADU conveyance roller /1-4		●				
		(5) ADU registration roller		●				
		(6) Sensors		●				
		(7) Gate sensor (two points)		●				
		(8) ADU horizontal conveyance sections (four points)		●				
		(9) ADU reverse section (one point)		●				
		(10) Gears					●	
11	Paper feed section	(1) Sensor (three points/tray)		●				
		(2) Gears (double feed prevention section)					●	
		(3) Conveyance/driven roller (paper feed)		●				
		(4) Feed roller/paper feed conveyance roller		●				
		(5) Double feed prevention roller		●				
12	By-pass feed section	(1) Sensor (four points)		●				
		(2) Gears					●	
		(3) Section peripheral of the by-pass feed unit		●				
		(4) Feed roller/paper conveyance roller		●				
		(5) Double feed prevention roller		●				
13	Scanner section	(1) Original glass (including slit glass)		●				
		(2) Exposure lamp		●				
		(3) Reflector		●				
		(4) Lens		●				
		(5) 1st to 3rd mirrors		●				
		(6) APS sensor		●				
		(7) Photo interrupter		●				
		(8) Optical guide rail		●				

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Clea- ning	Inspe- ction	Lubric- ation	Replace- ment	
14	Writing section	(1) Dust-proof glass (external)			●			
15	Fixing unit	(1) Fixing upper roller		●				
		(2) Fixing lower roller		●				
		(3) Fixing claw (L)		●				
		(4) Paper exit roller		●				
		(5) Paper exit conveyance roller (right) and guide rib		●				
		(6) Fixing unit entrance and exit guide plate		●				
		(7) Fixing temperature sensor /2		●				
		(8) Decurler		●				
		(9) Fixing gear				●		Heatproof grease
		(10) Fixing web unit (25 mode counter resetting) 4024-1001-xx	1				●	
16	Vertical con- veyance	(11) Fixing claw (U) 4024-1014-xx	6				●	
		(12) Heat insulating sleeve				●		
17	Final check	(1) Horizontal conveyance roller	3	●				
		(2) Sensor	5	●				
		(1) W.U.T. check			●			
		(2) Peripheral and exterior cleaning		●				
		(3) Image and paper through check			●			
		(4) PM counter resetting (25 mode)			●			

2. RADF [EDH](Every 250,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Clea- ning	Inspe- ction	Lubric- ation	Replace- ment	
1	Preparation	(1) Paper through check			●			
2	Paper feed section	(1) Size detection sensor/1	1	●				
		(2) Size detection sensor/2	1	●				
		(3) Registration sensor	1	●				
		(4) Feed roller	1	●				
		(5) Paper feed roller rubber	1	●				
		(6) Double feed prevention roller rubber	1	●				
		(7) Cleaning pad	1	●				
		(8) Registration roller	1	●				
3	Conveyance section	(1) Read sensor	1	●				
		(2) Skew sensor (F)	1	●				
		(3) Skew sensor (R)	1	●				
		(4) Double side registration sen- sor	1	●				
		(5) Read roller (F)	1	●				
		(6) Read roller (R)	1	●				
		(7) Platen guide	1	●				
		(8) Reverse conveyance roller/1	1	●				
		(9) Reverse conveyance roller/2	1	●				
4	Paper exit section	(1) Paper exit roller	1	●				
5	Final check	(1) Paper through check			●			
		(2) Exterior cleaning		●				

3. FNS [FN-112] (Every 250,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Preparation	(1) Paper through check			●			
2	Conveyance section	(1) Conveyance roller		●				
		(2) Paper exit roller/A (sponge roller) 4594-2074-xx	10				●	
		(3) Conveyance roller/4 (sponge roller) 4594-2067-xx	4				●	
3	Drive section	(1) Main drive unit			● (●)			*1
		(2) Tray up/down unit			● (●)			*1
		(3) Shift drive unit			● (●)			*1
		(4) Paper exit drive unit			● (●)			*1
		(5) Staple unit			● (●)			*1
4	Stapler unit	(1) Staple cartridge (5,000 staples/cartridge)	2		●		(●)	Replace as necessary
5	Exterior	(1) Exterior cleaning		●				*2
6	Final check	(1) Paper through check			●			*3

*1 If abnormal sound is heard due to insufficient oil, lubricate it.

*2 Clean the edge of the sponge roller at the left side.

*3 Check to see that the upper and lower positions are properly set.

4. FNS [FN-6] (Every 250,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Preparation	(1) Paper through check			●			
2	Conveyance section	(1) Conveyance roller		●				
		(2) Paper exit roller/A (sponge) 4594-2074-xx	10				●	
		(3) Conveyance roller/4 (sponge) 4594-2067-xx	4				●	
3	Drive section	(1) Main drive unit			● (●)			*1
		(2) Tray up/down unit			● (●)			*1
		(3) Shift drive unit			● (●)			*1
		(4) Paper exit drive unit			● (●)			*1
		(5) Staple unit			● (●)			*1
		(6) Folding unit			● (●)			*1
4	Folding unit	(1) Folding roller		●				
5	Stapler unit	(1) Staple cartridge (5,000 staples/cartridge)	2		●		(●)	Replace as necessary
6	Exterior	(1) Exterior cleaning		●				*2
7	Final check	(1) Paper through check			●			*3

*1 If abnormal sound is heard due to insufficient oil, lubricate it.

*2 Clean the edge of the sponge roller at the left side.

*3 Check to see that the upper and lower positions are properly set.

5. LCT [C-403/404](Every 250,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Preparation	(1) Paper through check			●			
2	Inside of machine	(1) Sensors		●				
		(2) Gears				●		
		(3) Conveyance roller/driven roller		●				
		(4) Feed roller		●				
		(5) Paper feed conveyance roller		●				
		(6) Double feed prevention roller		●				
3	Final check	(1) Paper through check			●			
		(2) Exterior cleaning		●				

6. Cover Inserter B (Every 250,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Conveyance section	(1) Conveyance roller		●				
2	Paper feed section	(1) Feed roller		●		(●)		*1
		(2) Paper feed conveyance roller		●		(●)		*1
		(3) Double feed prevention roller		●		(●)		*1
3	Final check	(1) Paper through check			●			
		(2) Exterior cleaning		●				

*1 If abnormal sound is heard due to insufficient oil, lubricate it.

7. PK-2 / PK-5 (Every 250,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Punch section	(1) Punch die		●				
2	Conveyance section	(1) Punch dust box (for punch dust dump)		●				
		(2) Punch dust detection sensor		●				
3	Final check	(1) Paper through check			●			
		(2) Internal cleaning		●				

8. ZK-2 (Every 250,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Punch unit main body	(1) Punch die		●				
2	Punch dust collection section	(1) Punch dust box (for punch dust dump)		●				
		(2) Punch dust detection sensor		●				
3	Final check	(1) Paper through check			●			
		(2) Internal cleaning		●				

[3] Main Body Periodic Inspection Items

1. Periodic check (I) (Every 500,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Fixing unit	(1) Fixing roller (U) 4024-2002-xx	1				●	
		(2) Heat insulating sleeve (U) 4014-3007-xx	2			●	●	Apply Tri flow oil when replacing the sleeve.
		(3) Upper roller bearing 4014-1747-xx	2				●	
		(4) Fixing roller (L) 4024-1013-xx	1				●	
		(5) Fixing claw (L) 4024-1015-xx	3				●	
		(6) Fixing rolling bearing 4024-2005-xx	2				●	
		(6) Decurler roller 4024-2713-xx	1				●	
2	Drum unit	(1) Drum separation claw 4024-1009-xx	3				●	
		(2) Drum replacement (25 mode counter resetting)	1				●	
3	Paper feed unit	(1) Feed roller assembly 55 cpm 4026-1010-xx 65 cpm 4024-2058-xx	3				●	Actual replacement count: 125 K feeds
		(2) Double feed prevention roller rubber 4024-2035-xx	3				●	
4	By-pass feed unit	(1) Conveyance roller rubber (by-pass feed) 4024-1030-xx	1				●	Actual replacement count: 70 K feeds
		(3) Double feed prevention roller rubber (manual feed) 4024-1030-xx	1				●	

2. Periodic check (II) (Every 1,000,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed unit	(1) Paper feed oscillate roller assembly 55 cpm 4026-1011-xx 65 cpm 4024-2056-xx	3				●	Actual replacement count: 800 K feeds
2	By-pass feed unit	(1) Paper feed roller rubber (manual feed) 4024-1029-xx	1				●	Actual replacement count: 140 K feeds
3	Fixing unit	(1) Fixing lamp/1 MC only 4026-2086-xx ME only 4024-2087-xx	1				●	
		(2) Fixing lamp/2 MC only 4026-2089-xx ME only 4024-2090-xx	1				●	
		(2) Fixing lamp/3 MC only 4026-2091-xx ME only 4024-2092-xx	1				●	
		(3) ADU conveyance bearing 4024-2374-xx	2				●	
		(4) Bearing/1 4024-2188-xx	2				●	
4	Drive unit	(1) Fixing drive gear 4024-2360-xx	1				●	

3. Periodic check (III) (Every 2,000,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Drum unit	(1) Drum separation claw solenoid 4024-1035-xx	1				●	
2	Paper feed drive unit	(1) Vertical conveyance clutch/1,2 4024-1028-xx	2				●	Actual replacement count: 2 million feeds
3	Second paper feed unit	(1) 2nd paper feed clutch 4024-1028-xx	1				●	
4	Transfer/separation corona unit	(1) Transfer/separation corona unit 4024-1018-xx	1				●	

4. Periodic check (IV) (Every 2,500,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Drum unit	(1) Toner control board unit 4024-1017-xx	1				●	
2	Charging corona unit	(1) Charging corona unit (including PCL) 4024-1022-xx	1				●	
3	2nd paper feed unit	(1) TSL 4024-2093-xx	1				●	
		(2) Drum driving bearing 4024-2190-xx	2				●	
		(3) Registration roller (U) 4024-2627-xx	1				●	
4	Developing unit	(1) Developing unit 4024-1024-xx	1				●	
5	Fixing unit	(1) Upper roller error detection sensor 4024-1021-xx	1				●	
6	ADU	(1) Registration shaft (L) 4024-2410-xx	2				●	
		(2) Registration shaft (U) 4024-2411-xx	2				●	
		(3) ADU registration roller (U) 4024-2671-xx	1				●	
		(4) ADU registration roller (L) 4024-2672-xx	1				●	
7	Conveyance unit	(1) TSL cover assembly 4024-2622-xx	1				●	

5. Periodic check (V) (Every 4,000,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed section	(1) Paper feed clutch (tray 1 to 3) 4024-1028-xx	3				●	Actual replacement count: 2 million feeds
		(2) Conveyance clutch (tray 1 to 3) 4024-1028-xx	3				●	

[4] RADF [EDH]

1. Periodic check (I) (Every 500,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed section	(1) Feed roller rubber 4594-1009-xx	1				●	Actual replacement count: 200 K feeds
		(2) Paper feed roller rubber 4594-1010-xx	1				●	
		(3) Double feed prevention roller rubber 4594-1011-xx	1				●	

2. Periodic check (II) (Every 1,500,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed section	(1) Double feed prevention roller 4594-1012-xx	1				●	Actual replacement count: 600 K feeds

[5] FNS

[FN-6 / FN-112]

1. Periodic check (I) (Every 1,000,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Stapler unit	(1) Stapler unit 4594-1001-xx	2				●	Actual replacement count: 200 K feeds each

2. Periodic check (II) (Every 2,500,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Drive unit	(1) FNS up/down motor 4594-2206-xx	1				●	Actual replacement count: 2.5 million feeds

[6] LCT [C-403 / C-404]

1. Periodic check (I) (Every 1,000,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Inside of machine	(1) Feed roller 4014-3029-xx	1				●	Actual replacement count: 500 K feeds each
		(2) Paper feed conveyance roller 4014-3028-xx	1				●	
		(3) Double feed prevention roller 4014-3029-xx	1				●	

2. Periodic check (II) (Every 4,000,000 copies)

NO	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Inside of machine	(1) Feed clutch 4024-1028-xx	1				●	Actual replacement count: 2 million feeds
		(2) Conveyance clutch 4024-1028-xx	1				●	

[7] PI [Cover Inserter B]

1. Periodic check (I) (Every 500,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed section	(1) Feed roller assembly/B 4014-3153-xx	2				●	Actual replacement count: 100 K feeds
		(2) Double feed prevention roller assembly 4594-1004-xx					●	

2. Periodic check (II) (Every 1,000,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed section	(1) Feed roller assembly/A 4014-3152-xx	2				●	Actual replacement count: 200 K feeds each

3. Periodic check (III) (Every 3,000,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Paper feed section	(1) Torque limiter 4594-1005-xx	2				●	Actual replacement count: 600 K feeds

[8] ZK [ZK-2]

1. Periodic check (I) (Every 3,000,000 copies)

No	Classification	Service item	Number of parts replaced	Implementation classification				Note
				Cleaning	Inspection	Lubrication	Replacement	
1	Punch section	(1) Punch clutch 4014-2595-xx	1				●	Actual replacement count: 1,000 K feeds
2	Punch scraps conveyance section	(2) Punch scraps conveyance motor 4014-2617-xx	1				●	

[9] Replacement parts list

1. Main body

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
1	Maintenance (Every 250,000 copies)	Charging control plate	4024-1006-xx	1	250,000		6
		Charging wire	4024-1020-xx	1	250,000		22
		Charger cleaning base	4024-2486-xx	1	250,000		
		Charger slide block	4024-2485-xx	1	250,000		
		Charger cleaning block /U	4024-1007-xx	1	250,000		7
		Resin ring (φ2) (charging corona)	4014-1750-xx	1	250,000		
		Charger cleaning block /L	4024-1008-xx	1	250,000		8
		Toner guide roller	4024-1005-xx	1	250,000		5
		Cleaning blade	4024-1004-xx	1	250,000		4
		Developer	-	1	250,000		2
		Discharge wire	4024-1010-xx	3	250,000		10
		Transfer cleaning assembly	4024-1011-xx	1	250,000		11
		Separation cleaning assembly	4024-1019-xx	1	250,000		21
		Resin ring (φ2) (transfer/separation corona unit)	4014-1750-xx	2	250,000		
		Ozone filter K	4014-1795-xx	1	250,000		24
		Developing suction filter	4024-2001-xx	1	250,000		
		Fixing web unit	4024-1001-xx	1	250,000		1
		Fixing claw /U	4024-1014-xx	6	250,000		14
		Transfer presser rubber	4024-3053-xx	3	250,000		

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
2	Periodic check (I) (Every 500,000 copies)	Fixing roller /U	4026-2002-xx	1	500,000		12
		Insulating sleeve /U	4014-3007-xx	2	500,000		16
		Upper roller bearing	4014-1747-xx	2	500,000		17
		Fixing roller /L	4024-1013-xx	1	500,000		13
		Fixing claw /L	4024-1015-xx	3	500,000		15
		Fixing rolling bearing	4024-2005-xx	2	500,000		
		Decurler roller	4024-2713-xx	1	500,000		
		Drum separation claw	4024-1009-xx	3	500,000		9
		Drum	-	1	500,000		3
		Feed roller assembly (Tray 1 to 3) *55 cpm only	4026-1010-xx	3		125,000	30,35,40
		Feed roller assembly (Tray 1 to 3) *65 cpm only	4024-2058-xx	3		125,000	30,35,40
		Double feed prevention roller rubber (Tray 1 to 3)	4024-2035-xx	3		125,000	30,35,40
3	Periodic check (II) (Every 1,000,000 copies)	Conveyance roller rubber (by-pass feed)	4024-1030-xx	1		70,000	50
		Double feed prevention roller rubber (by-pass feed)	4024-1030-xx	1		70,000	50
		Paper feed oscillate roller assembly (Tray 1 to 3) *55 cpm only	4026-1011-xx	3		800,000	29,34,39
		Paper feed oscillate roller assembly (Tray 1 to 3) *65 cpm only	4024-2056-xx	3		800,000	29,34,39
		Paper feed rubber (by-pass feed)	4024-1029-xx	1		140,000	49
		Fixing lamp/1 MC only ME only	4024-2086-xx 4024-2087-xx	1	1,000,000		
		Fixing lamp/2 MC only ME only	4024-2089-xx 4024-2090-xx	1	1,000,000		
		Fixing lamp/3 MC only ME only	4024-2091-xx 4024-2092-xx	1	1,000,000		
		ADU conveyance bearing	4024-2374-xx	2	1,000,000		
		Bearing/1	4024-2188-xx	2	1,000,000		
4	Periodic check (III) (Every 2,000,000 copies)	Fixing drive gear	4024-2360-xx	1	1,000,000		
		Drum separation claw solenoid	4024-1035-xx	1	2,000,000		103
		Vertical conveyance clutch/1,2	4024-1028-xx	2		2,000,000	61,62
		2nd paper feed clutch	4024-1028-xx	1	2,000,000		64
		Transfer/separation corona unit	4024-1018-xx	1	2,000,000		20

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
5	Periodic check (IV) (Every 2,500,000 copies)	Toner control board unit	4024-1017-xx	1	2,500,000		19
		Charging unit (including PCL)	4024-1022-xx	1	2,500,000		25
		TSL	4024-2093-xx	1	2,500,000		
		Drum drive bearing	4024-2190-xx	2	2,500,000		
		Registration roller /U	4024-2627-xx	1	2,500,000		
		Developing unit	4024-1024-xx	1	2,500,000		27
		Upper roller error detection sensor	4024-1021-xx	1	2,500,000		23
		Registration bearing /L	4024-2410-xx	2	2,500,000		
		Registration bearing /U	4024-2411-xx	2	2,500,000		
		ADU registration roller /U	4024-2671-xx	1	2,500,000		
6	Periodic check (V) (Every 4,000,000 copies)	Paper feed clutch (Tray 1 to 3)	4024-1028-xx	3		2,000,000	31,36,41
		Conveyance clutch (Tray 1 to 3)	4024-1028-xx	3		2,000,000	32,37,42

2. EDH

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
1	Periodic check (I) (Every 500,000 copies)	Feed roller rubber	4594-1009-xx	1		200,000	92
		Paper feed roller	4594-1010-xx	1		200,000	93
		Double feed prevention roller rubber	4594-1011-xx	1		200,000	94
2	Periodic check (II) (Every 1,500,000 copies)	Double feed prevention roller	4594-1012-xx	1		600,000	95

3. FN-6/FN-112

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
1	Maintenance (Every 250,000 copies)	Paper exit roller A (sponge roller)	4594-2074-xx	10	250,000		
		Conveyance roller 4 (sponge roller)	4594-2067-xx	4	250,000		
		Staple cartridge	-	2		5,000/each	
2	Periodic check (I) (Every 1,000,000 copies)	Stapler unit (front)	4594-1001-xx	1		200,000	70
		Stapler unit (rear)	4594-1001-xx	1		200,000	71
3	Periodic check (II) (Every 2,500,000 copies)	FNS up/down motor	4594-2206-xx	1		2,500,000	69

4. C-403/C-404

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
1	Periodic check (I) (Every 1,000,000 copies)	Feed roller	4014-3029-xx	1		500,000	52
		Paper feed conveyance roller	4014-3028-xx	1		500,000	53
		Double feed prevention roller	4014-3029-xx	1		500,000	53
2	Periodic check (II) (Every 4,000,000 copies)	Paper feed clutch	4024-1028-xx	1		2,000,000	54
		Conveyance clutch	4024-1028-xx	1		2,000,000	55

5. Cover Inserter B

No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
1	Periodic check (I) (Every 500,000 copies)	Feed roller assembly/B	4014-3153-xx	2		100,000	79
		Double feed prevention roller assembly	4594-1004-xx	2		100,000	80
2	Periodic check (II) (Every 1,000,000 copies)	Feed roller assembly/A	4014-3152-xx	2		200,000	78
3	Periodic check (II) (Every 3,000,000 copies)	Torque limiter (U and L)	4594-1005-xx	2		600,000	81,86

6. ZK-2

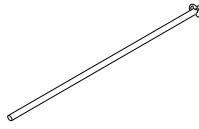
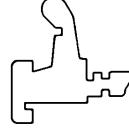
No	Classification	Parts name	Parts No.	Qty	Total count	Actual count	Parts count No.
1	Periodic check (I) (Every 3,000,000 copies)	Punch clutch	4014-2595-xx	1		1,000,000	88, 89, 90
		Punch scraps conveyance motor	4014-2617-xx	1		1,000,000	88, 89, 90

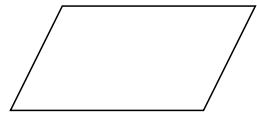
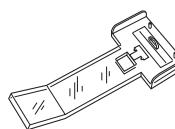
COPY MATERIALS

[1] Single unit supply

Name	Durability/copies
Toner cartridge	43,000
Developer	250,000
Drum	500,000

SERVICE MATERIAL LIST

Tool No.	Tool Name	Appearance	Quantity	Remarks
4024-2152-01	Thermostat PS jig (for upper roller)		1	
4024-2992-01	Thermostat PS jig (for lower roller)		1	
4024-2990-01	Temp. detection jig		1	
4014-5005-01	Optics PS jig		2	
4014-5006-01	Door switch jig		2set	2PCS/set
4014-5007-01	Setting powder		25 g	

Tool No.	Tool Name	Appearance	Quantity	Remarks
4014-5008-01*	PS shaft		2pc/set	For EDH positioning
4014-5010-01*	ADJ chart		1	For EDH adjustment
4014-5011-01*	White chart		1	For EDH adjustment
4014-5009-01	Stapler PS jig		1	For FN-6/ FN-112 adjustment

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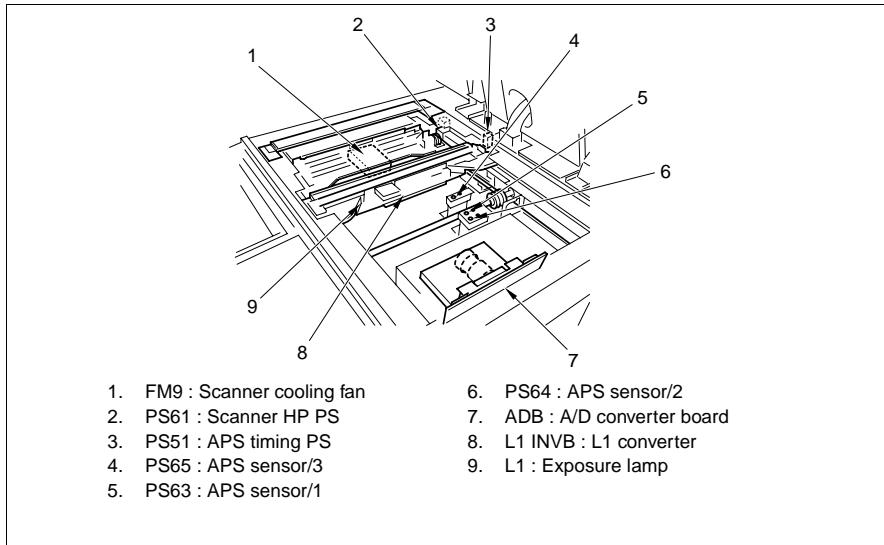
ELECTRIC PARTS LIST

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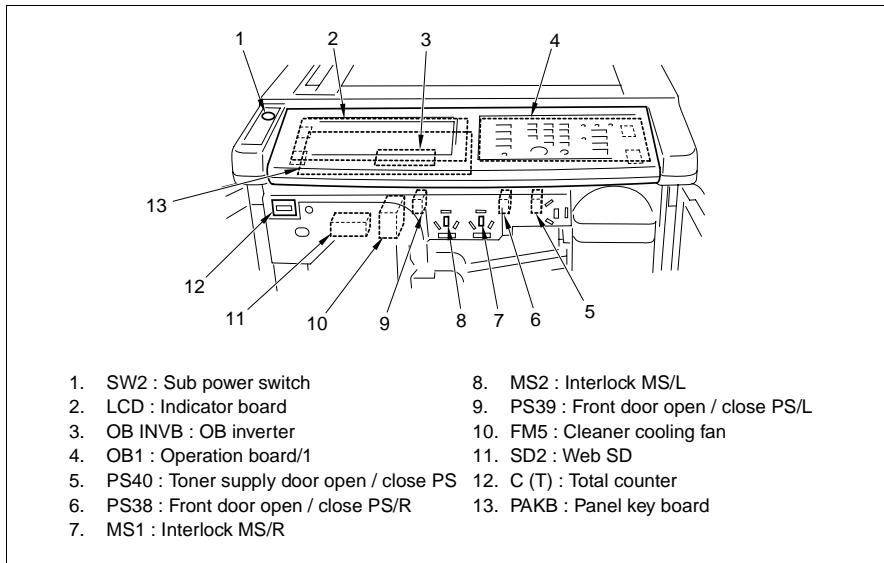
PARTS LAYOUT DRAWING

[1] Parts Layout Drawing

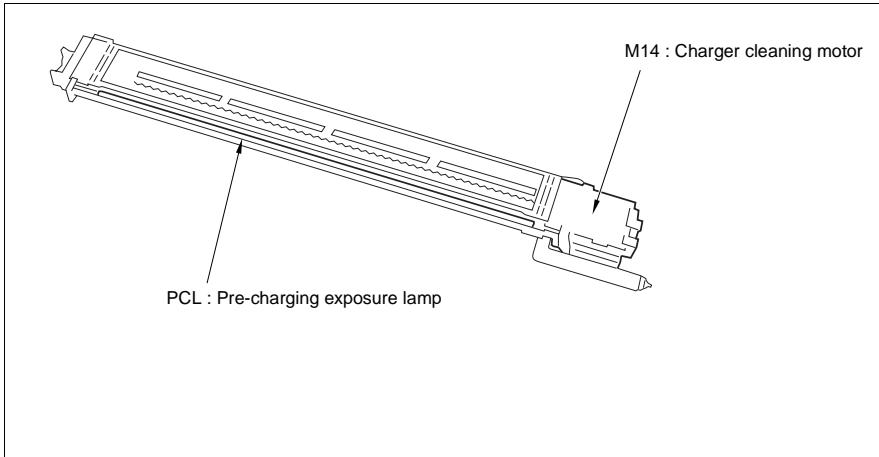
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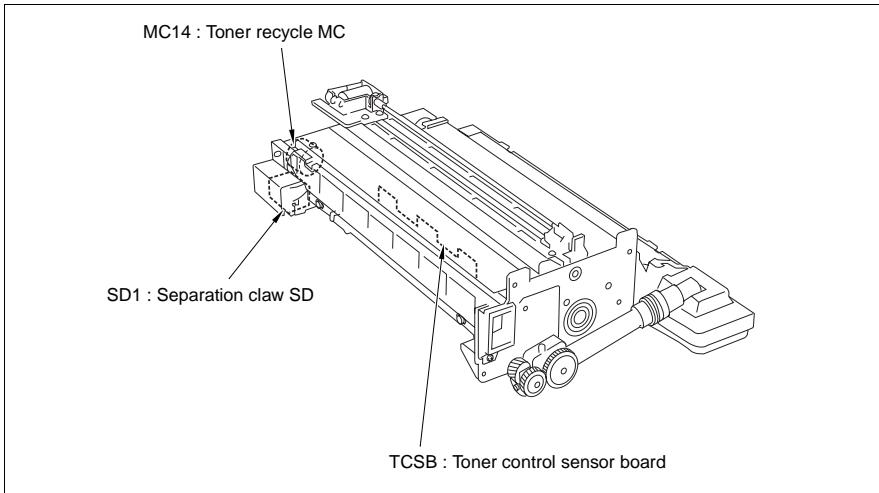
2. Operation Section



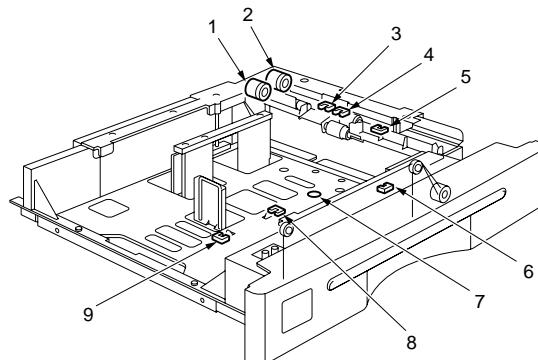
3. Charging corona Section



4. Drum Stand Section

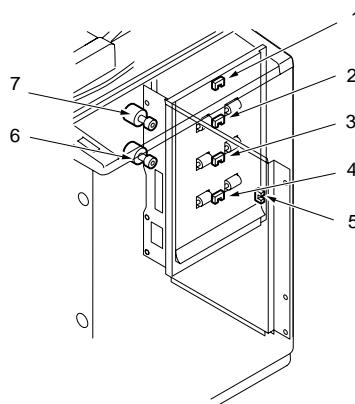


5. Tray 1, 2, 3



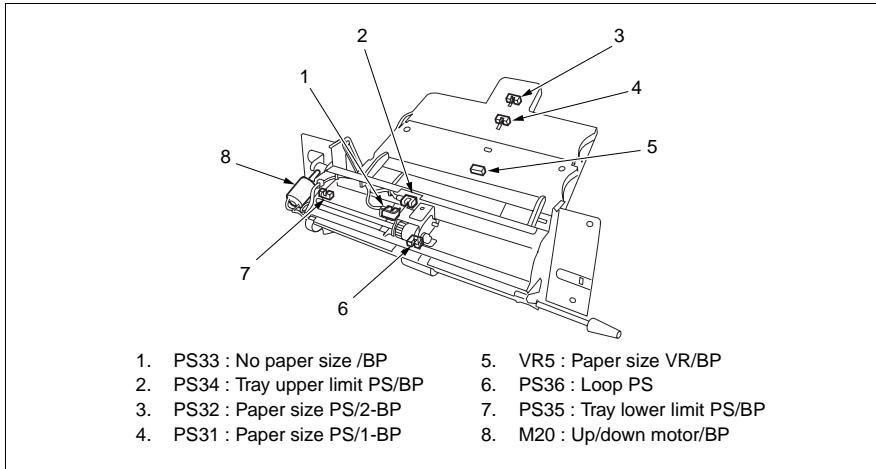
- | | |
|---|--|
| 1. MC3/5/7 : Paper feed MC /1, /2, /3 | 6. PS4/10/16 : Remaining paper PS/1, /2, /3 |
| 2. MC4/6/8 : Pre-registration MC/1, /2, /3 | 7. VR1/2/3 : Paper size VR/1, /2, /3 |
| 3. PS2/8/14 : Tray upper limit PS/1, /2, /3 | 8. PS5/11/17 : Paper size PS/1-1, /1-2, /1-3 |
| 4. PS3/9/15 : No paper PS/1, /2, /3 | 9. PS6/12/18 : Paper size PS/2-1, /2-2, /2-3 |
| 5. PS1/7/13 : Paper feed PS/1, /2, /3 | |

6. Vertical Conveyance Section

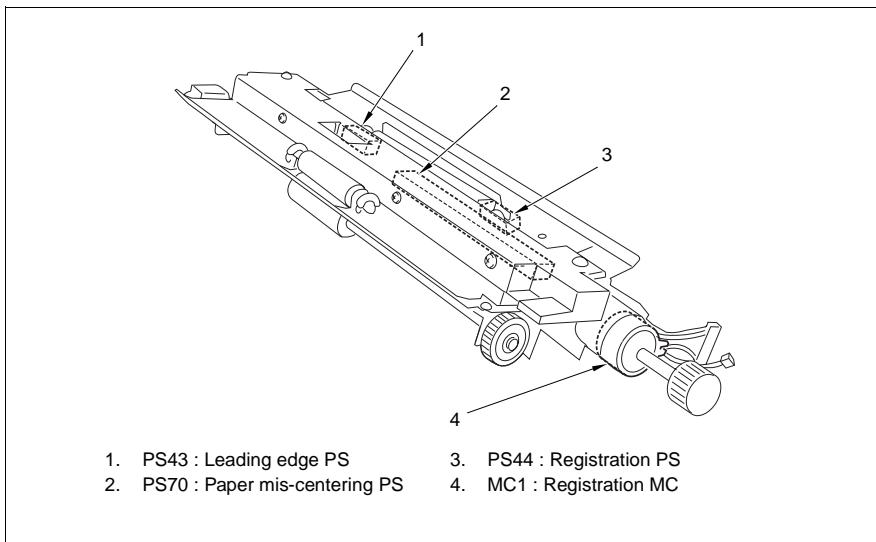


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| 1. PS25 : Vertical conveyance PS/1 | 5. PS29 : Vertical conveyance door open / close PS |
| 2. PS26 : Vertical conveyance PS/2 | 6. MC12 : Vertical conveyance MC/2 |
| 3. PS27 : Vertical conveyance PS/3 | 7. MC11 : Vertical conveyance MC/1 |
| 4. PS28 : Vertical conveyance PS/4 | |

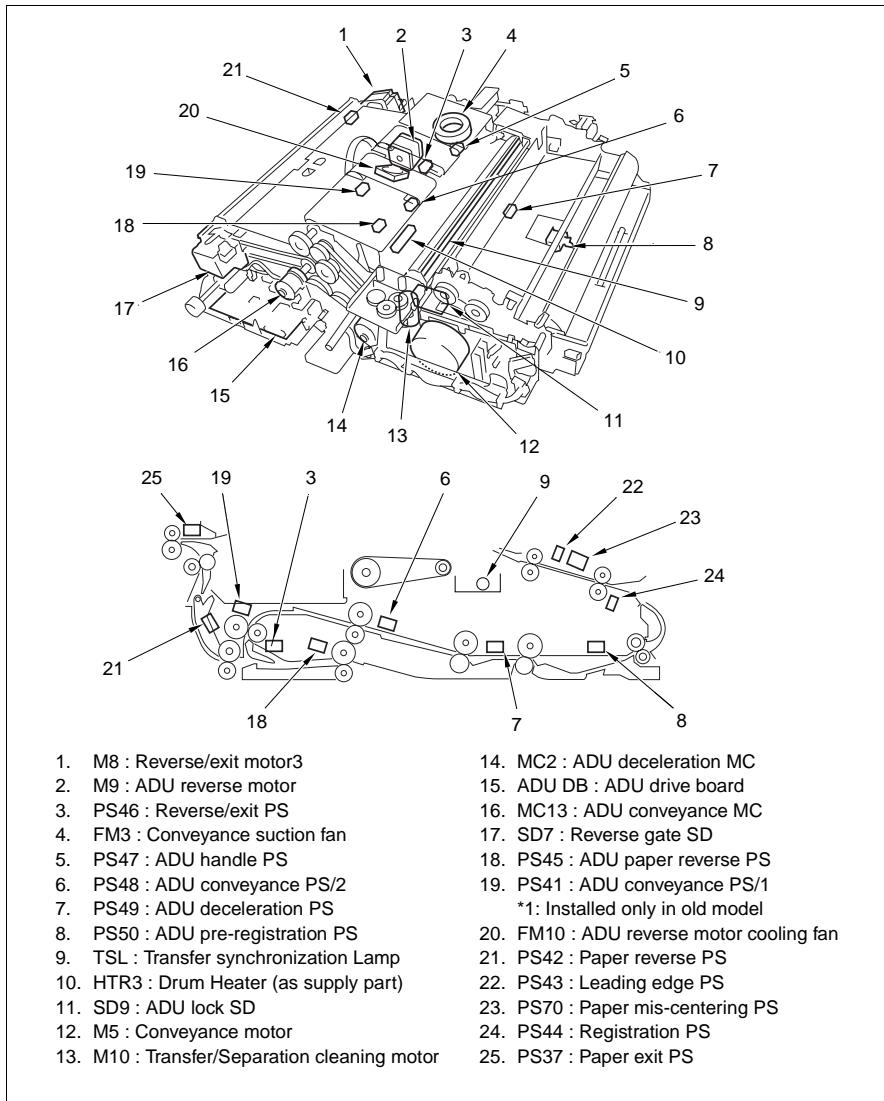
7. By-pass Feed Section



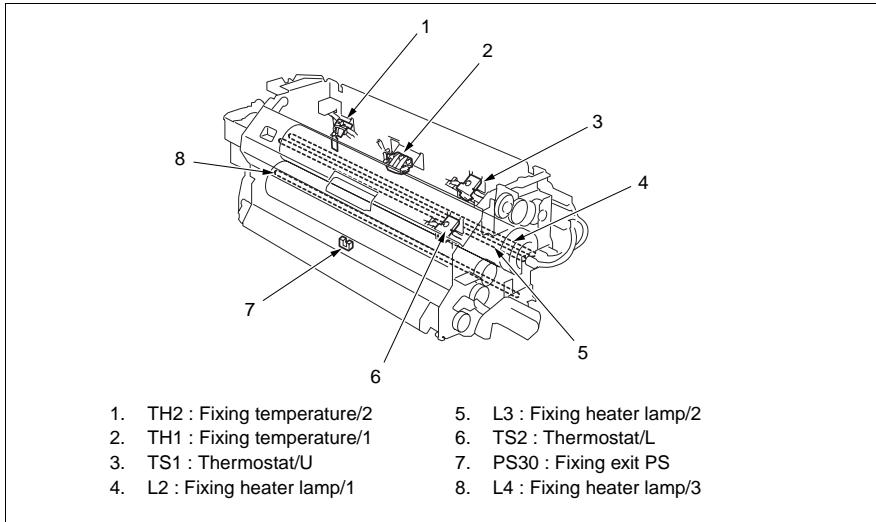
8. Second Paper Feed Section



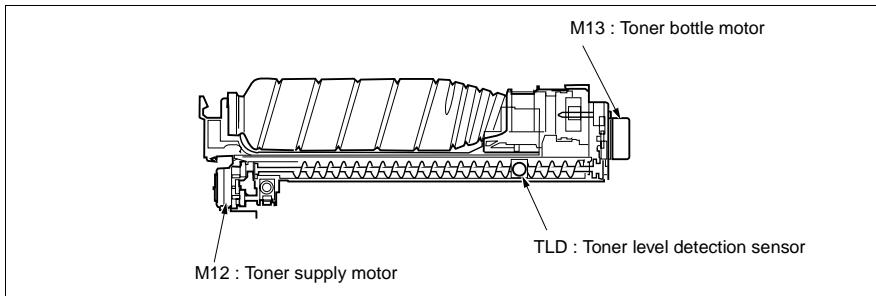
9. ADU Stand Section



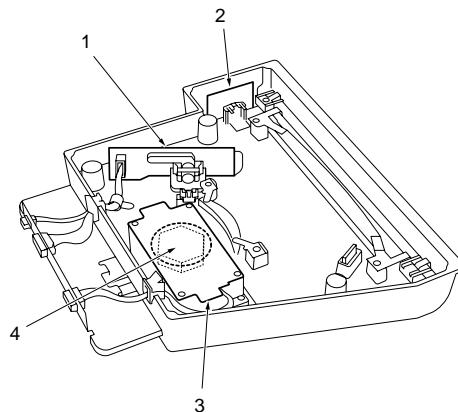
10. Fixing Section



11. Toner Supply Section

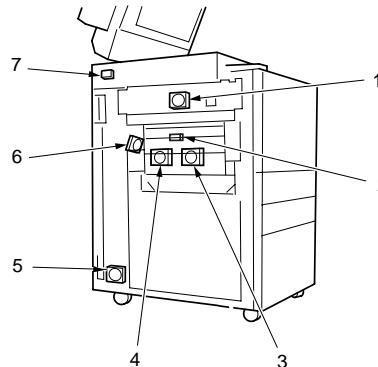


12. Write Section



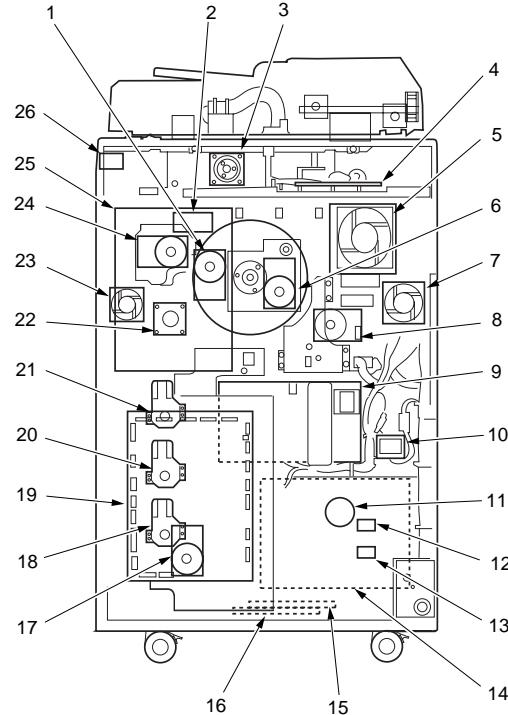
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|--------------------------------|--------------------------------|
| 1. LDB : Laser driver board | 3. PMDB : Polygon driver board |
| 2. INDXSB : Index sensor board | 4. M15 : Polygon motor |

13. Left Side of the Main Body



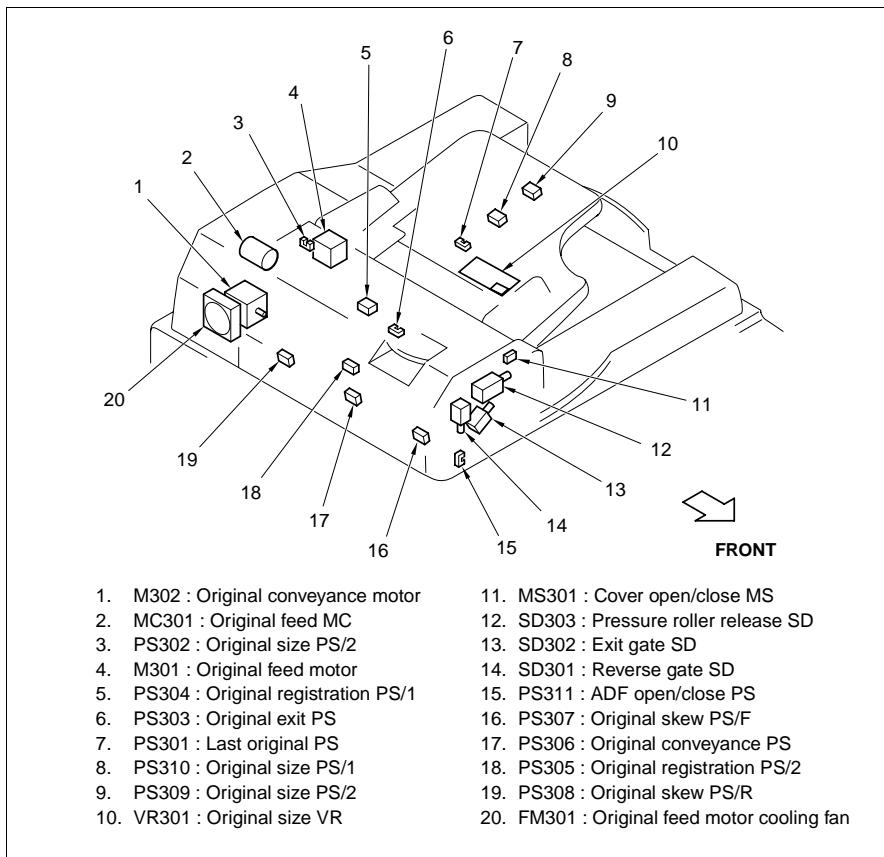
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|------------------------------------|------------------------------------|
| 1. FM2 : Write section cooling fan | 5. FM13 : Power supply cooling fan |
| 2. PS37 : Paper exit PS | 6. M7 : Paper exit motor |
| 3. FM6 : Paper exit fan/F | 7. SW1 : Main power switch |
| 4. FM7 : Paper exit fan/R | |

14. Rear Side of the Main Body

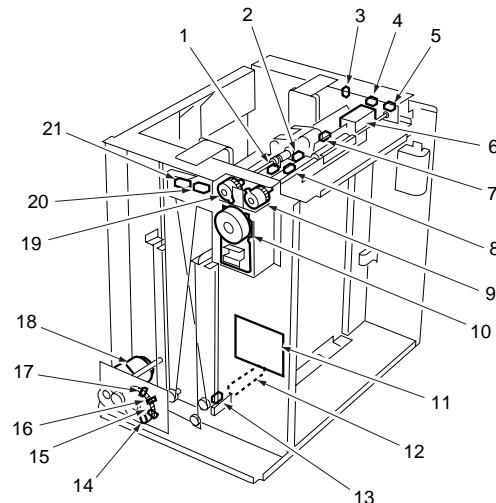


- | | |
|----------------------------------|----------------------------------|
| 1. M3 : Developing motor | 14. DCPS : DC power supply unit |
| 2. MB : Memory board | 15. HTR1 : Heater/1 |
| 3. M11 : Scanner motor | 16. HTR2 : Heater/2 |
| 4. SCDB : Scanner drive board | 17. M1 : Paper feed motor |
| 5. FM1 : Main body cooling fan/1 | 18. M18 : Tray up drive motor/3 |
| 6. M2 : Drum motor | 19. PRCB : Printer control board |
| 7. FM8 : Main cooling fan/2 | 20. M17 : Tray up drive motor/2 |
| 8. M4 : Fixing motor | 21. M16 : Tray up drive motor/1 |
| 9. HV : High voltage unit | 22. M6 : Loop roller motor |
| 10. TRANSFORMER : Transformer | 23. FM4 : Developing suction fan |
| 11. NF : Noise filter | 24. M12 : Toner supply motor |
| 12. CBR1 : Circuit breaker/1 | 25. ICB : Image control board |
| 13. CBR2 : Circuit breaker/2 | 26. C (K) : Key counter |

[2] RADF Parts Layout Drawing

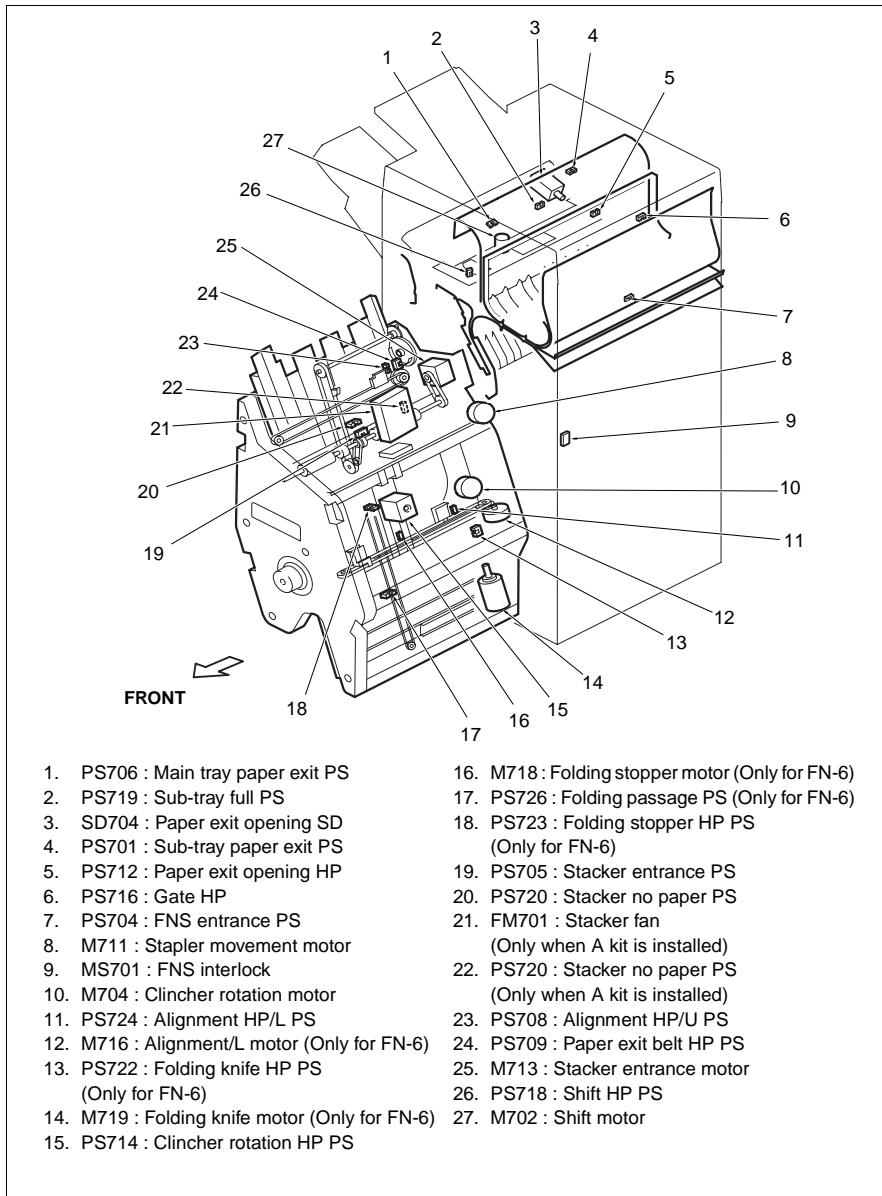


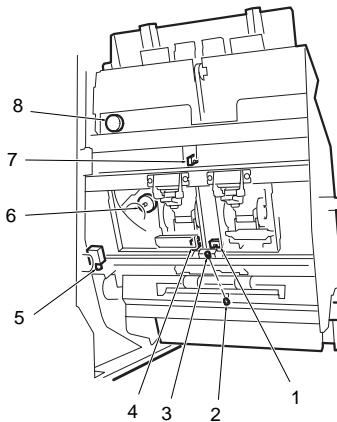
[3] C-403 / C-404 Parts Layout Drawing



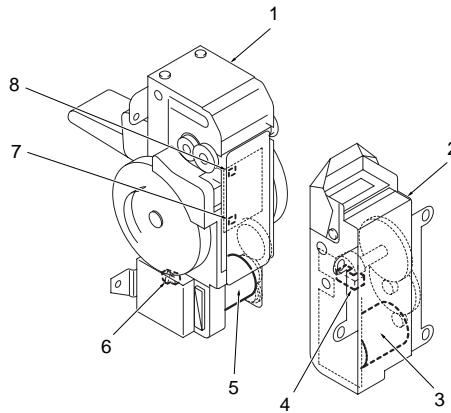
- | | |
|---|---|
| 1. PS107 : LT first paper feed PS | 12. HTR101 : LT heater |
| 2. PS108 : LT no paper detection PS | 13. PS101 : LT lower limit detection PS |
| 3. SW100 : LT tray down switch | 14. PS105 : LT remaining paper detection PS4 |
| 4. MS101 : LT upper cover interlock MS1 | 15. PS104 : LT remaining paper detection PS3 |
| 5. PS110 : LT jam door open / close
detection PS | 16. PS103 : LT remaining paper detection PS2 |
| 6. SD100 : LT first paper feed SD | 17. PS102 : LT remaining paper detection PS1 |
| 7. PS109 : LT upper limit detection PS | 18. M100 : LT UP/DOWN motor |
| 8. PS106 : LT paper feed PS | 19. MC101 : LT paper feed MC |
| 9. MC102 : LT first original feed MC | 20. PS100 : LT upper cover open / close
detection PS |
| 10. M101 : LT paper feed motor | |
| 11. LTDB : LT drive board | 21. MS102 : LT upper cover interlock MS2 |

[4] FN-6 / FN-112 Parts Layout Drawing

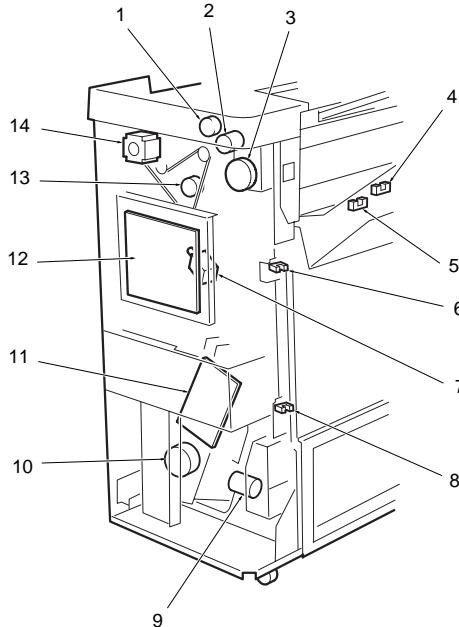




- | | |
|-----------------------------------|-----------------------------------|
| 1. PS725 : Folding exit PS | 5. SD706 : Three-folding gate SD |
| 2. LED729 : Folding full LED | 6. M706 : Stapler rotation motor |
| 3. PS729 : Folding full PS | 7. PS711 : Stapler movement HP PS |
| 4. PS713 : Stapler rotation HP PS | 8. M705 : Alignment motor/U |

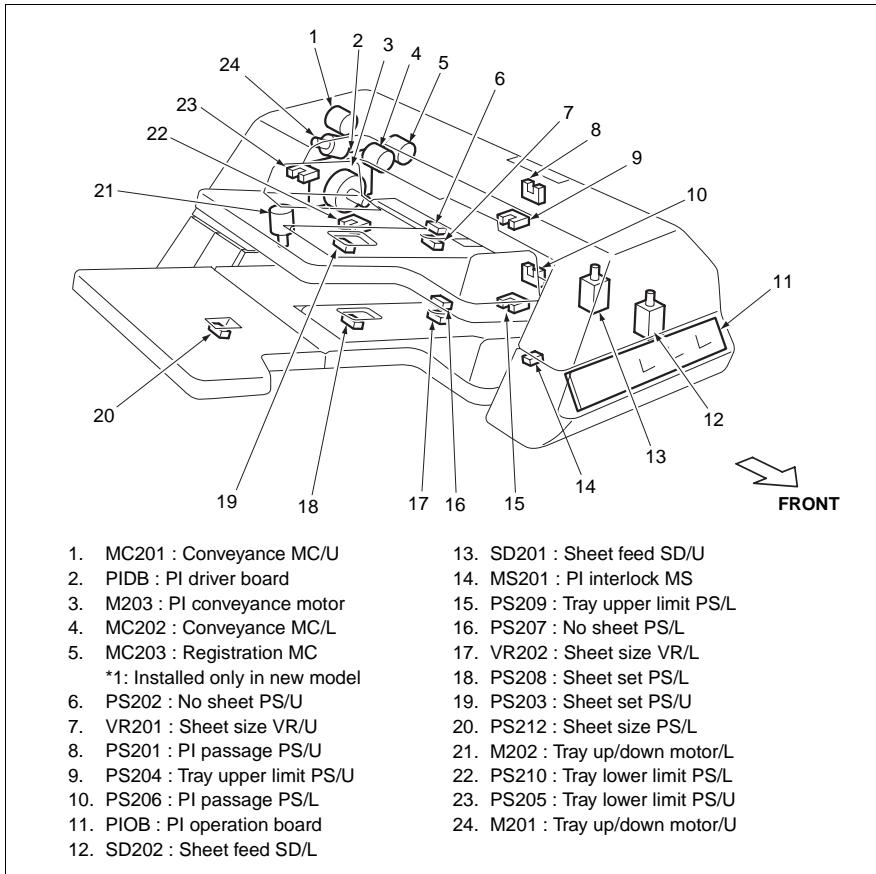


- | | |
|-----------------------------|----------------------------|
| 1. Stapler/R/F | 6. PS730 : Stapler HP PS/R |
| 2. Clincher/R/F | PS731 : Stapler HP PS/F |
| 3. M710 : Clincher motor/R | 7. SW701 : Cartridge SW/R |
| M715 : Clincher motor/F | SW703 : Cartridge SW/F |
| 4. PS732 : Clincher HP PS/R | 8. SW702 : Staple SW/R |
| PS733 : Clincher HP PS/F | SW704 : Staple SW/F |
| 5. M709 : Stapler motor/R | |
| M714 : Stapler motor/F | |

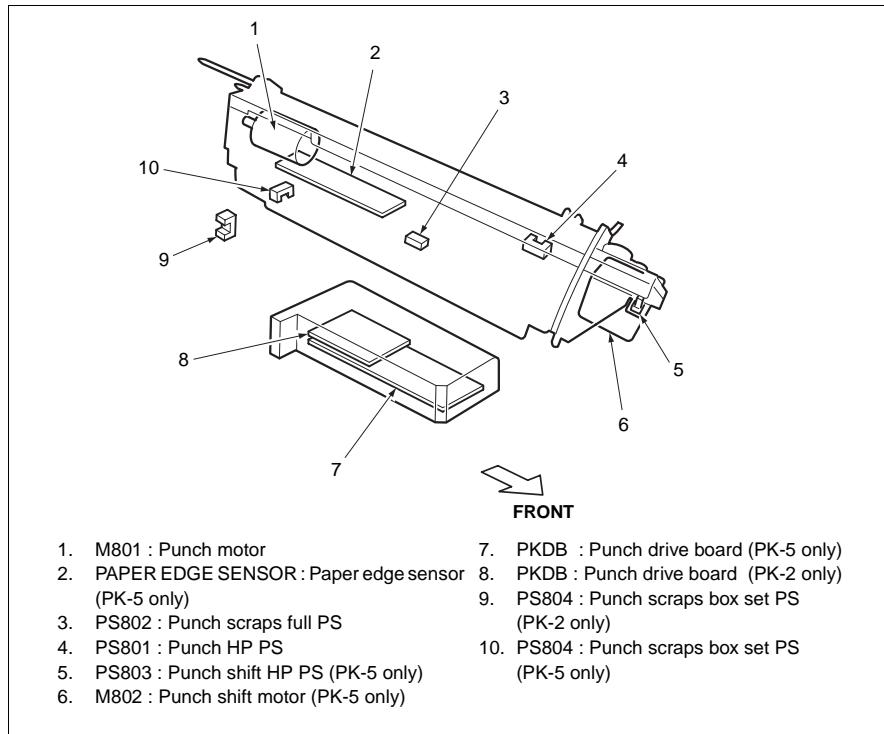


- | | |
|--|--|
| 1. M721 : Sub-tray paper exit motor | 9. M703 : Tray up/down motor |
| 2. M708 : Paper exit motor | 10. M720 : Folding conveyance motor
(Only for FN-6) |
| 3. M707 : Paper exit roller motor | 11. RB : Relay board |
| 4. PS707 : Stapler paper exit upper limit PS | 12. FNS CB : FNS control board |
| 5. PS702 : Tray upper limit PS | 13. M712 : Gate drive motor |
| 6. PS715 : Counter reset PS | 14. M701 : FNS conveyance motor |
| 7. SD705 : By-pass gate SD | |
| 8. PS703 : Tray lower limit PS | |

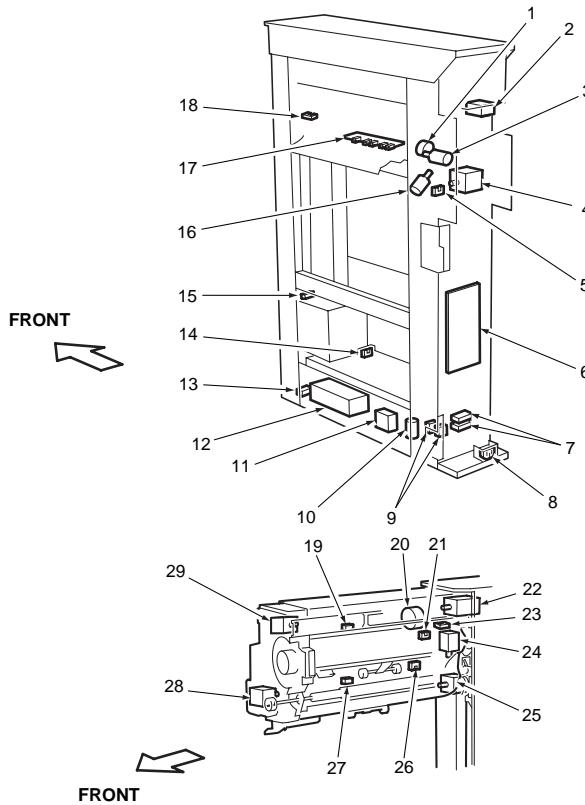
[5] Cover Inserter B Parts Layout Drawing



[6] PK-2 /PK-5 Parts Layout Drawing



[7] ZK-2 Parts Layout Drawing

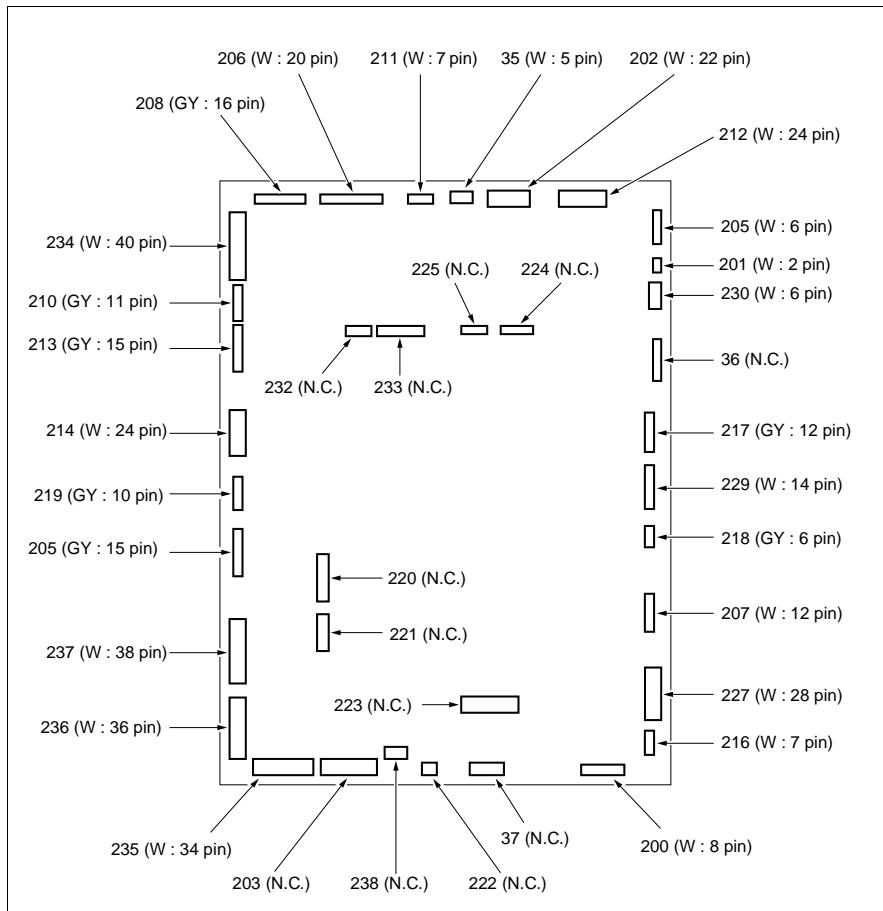


- | | |
|---------------------------------------|--|
| 1. MC1 : Punch clutch | 17. M7 : Punch scraps conveyance motor |
| 2. M10 : Conveyance motor cooling fan | 18. Paper edge PS |
| 3. M4 : Punch motor | 19. PS5 : Punch HP PS |
| 4. M5 : Punch shift motor | 20. PS1 : Passage PS |
| 5. PS4 : Puncher HP PS | 21. M2 : 1st stopper motor |
| 6. PZCB : PZ Control board | 22. PS3 : 1st stopper HP PS |
| 7. CBR : Circuit breaker | 23. M6 : Conveyance motor |
| 8. Inlet | 24. PS9 : Conveyance encoder PS |
| 9. RELAY : Pow | 25. SD1 : Gate SD/L |
| 10. er source relay | 26. M1 : Registration motor |
| 11. NF : Noise filter | 27. PS2 : 2nd stopper HP PS |
| 12. COIL : Coil | 28. PS8 : Exit PS |
| 13. DCPS : DC power unit | 29. M3 : 2nd stopper motor |
| 14. MS1 : Front door MS | 30. SD2 : Gate SD/U |
| 15. PS6 : Punch scraps box PS | |
| 16. PS7 : Punch scraps full PS | |

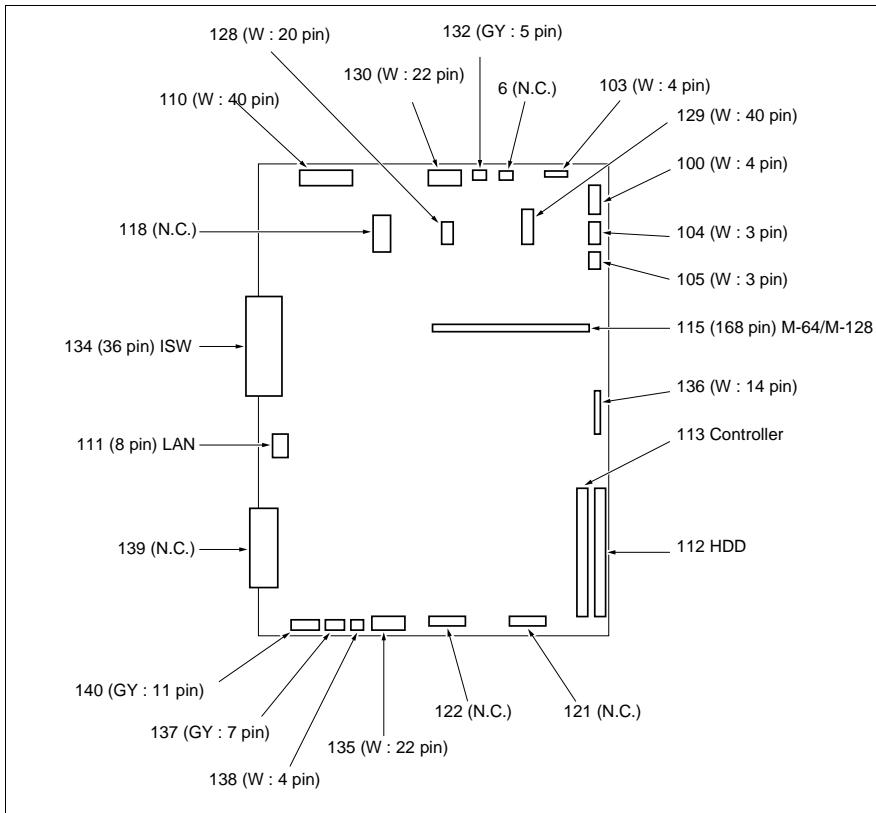
CONNECTOR LAYOUT DRAWING

[1] Connector Layout Drawing

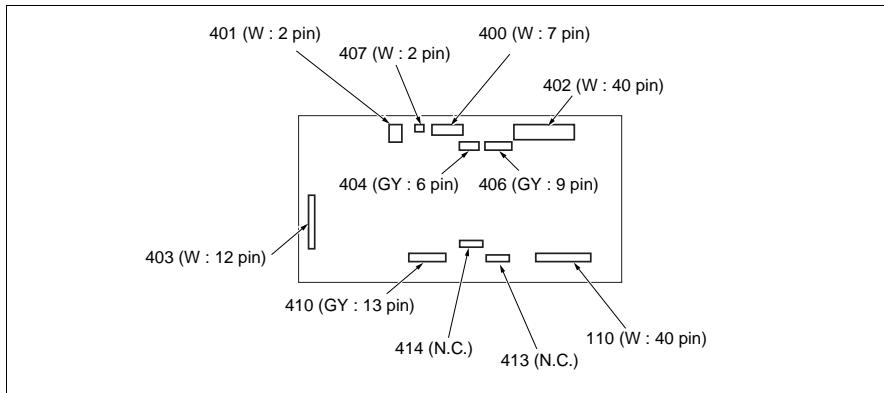
1. Printer control board



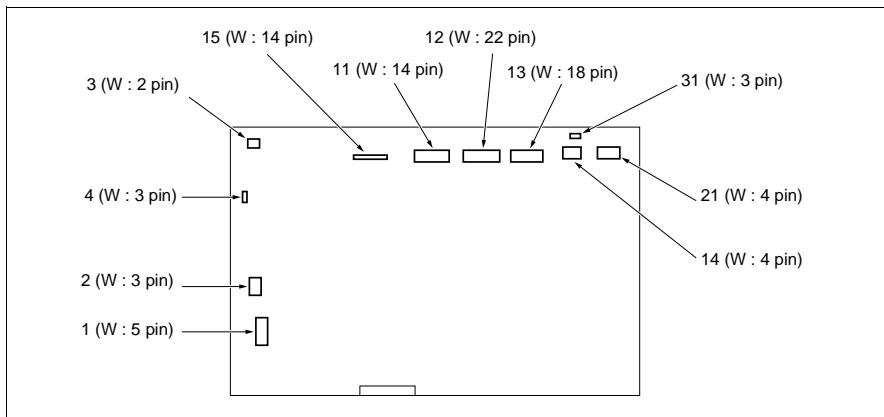
2. Image control board



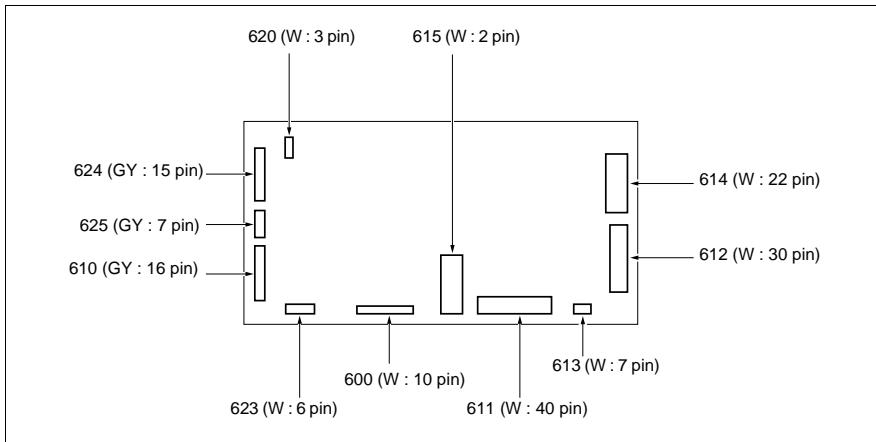
3. ADU drive board



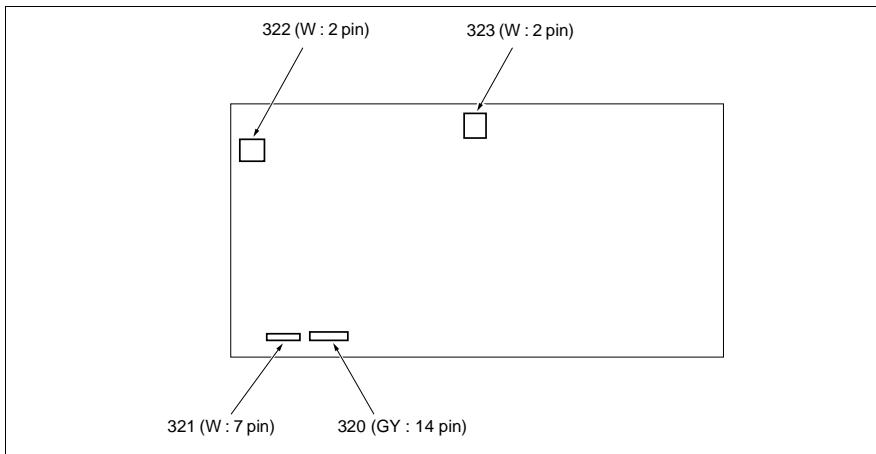
4. DC power supply unit



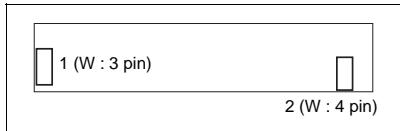
5. Scanner drive board



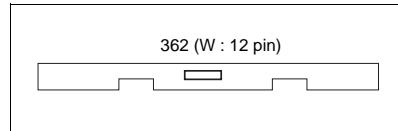
6. High voltage unit



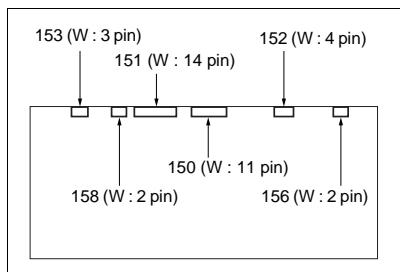
7. L1 inverter



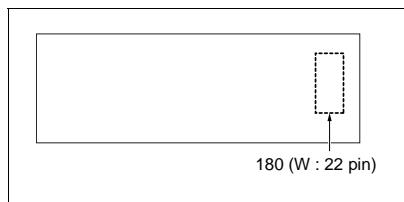
8. Toner control sensor board



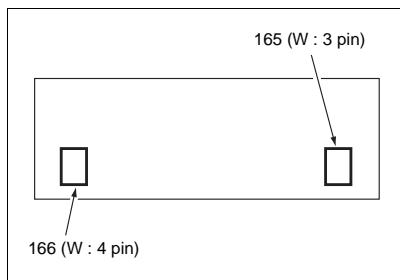
9. Operation board/1



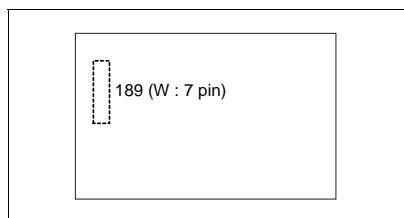
13. Laser driver board



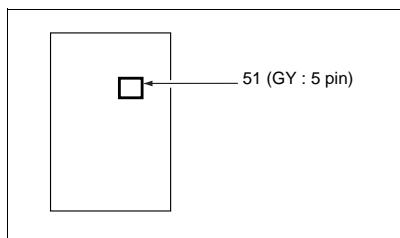
10. OB inverter



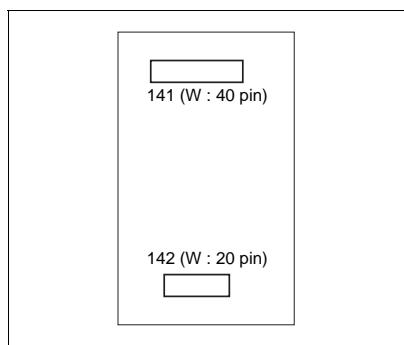
14. Polygon drive board



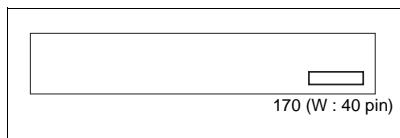
11. Index sensor board



15. Memory board

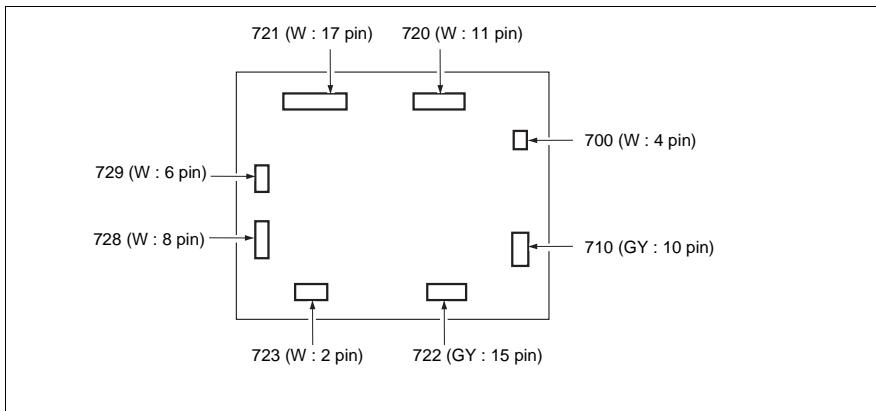


12. A/D converter board



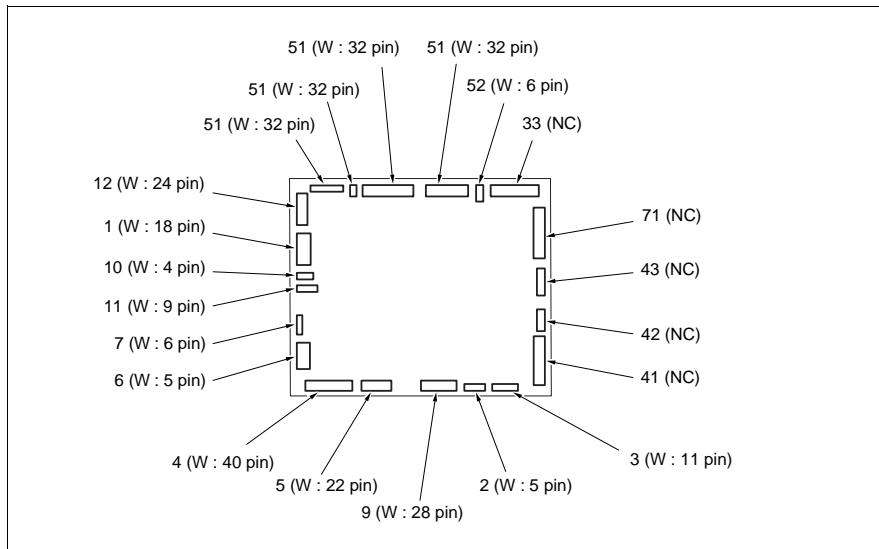
[2] C-403/C-404 Connector Layout Drawing

1. LT drive board

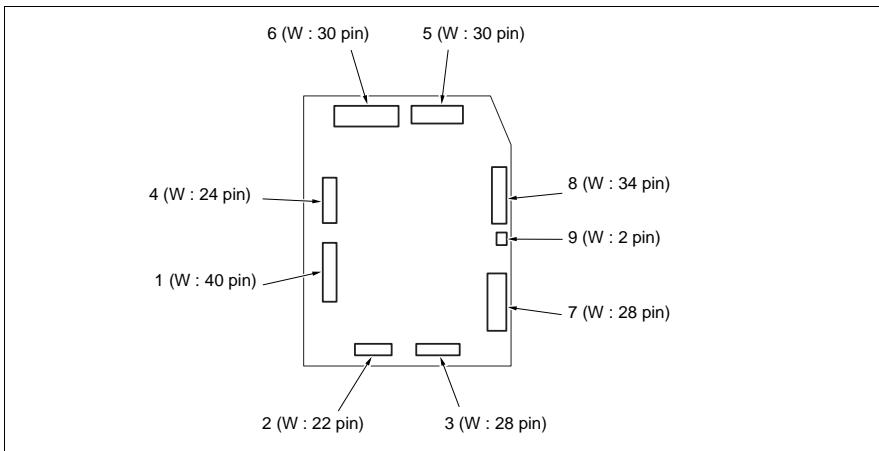


[3] FN-6 / FN-112 Connector Layout Drawing

1. FNS control board

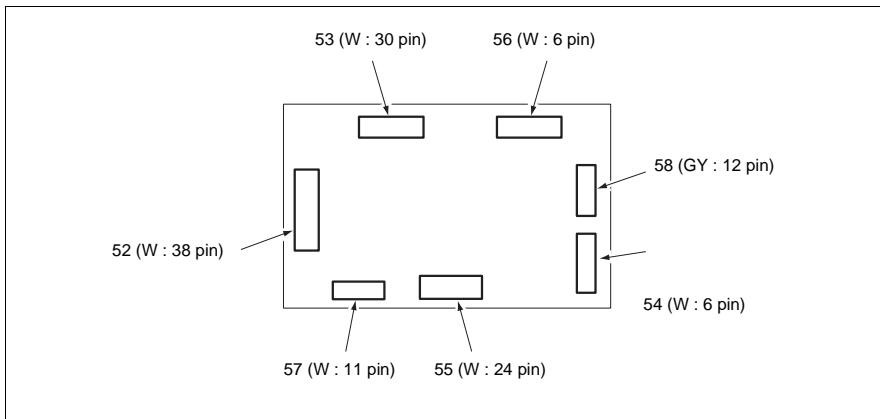


2. Relay board

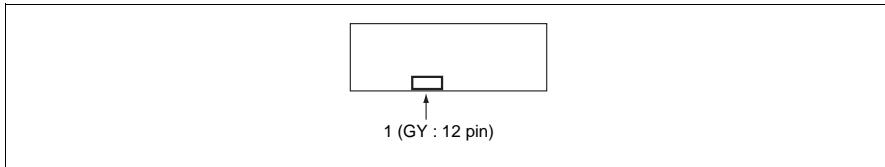


[4] Cover Inserter B Connector Layout Drawing

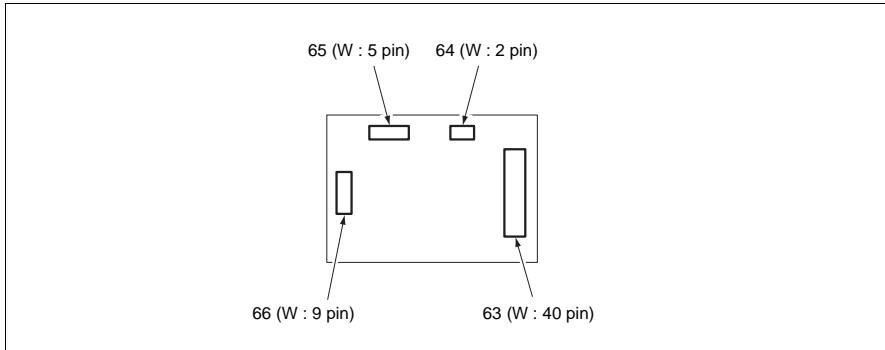
1. PI drive board



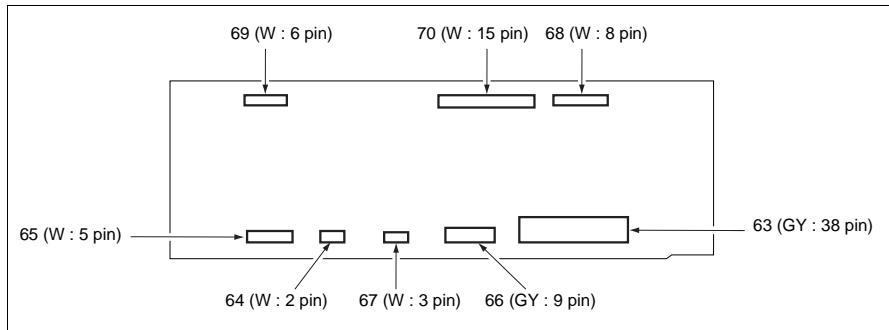
2. PI operation board

**[5] PK-2 /PK-5 Connector Layout Drawing**

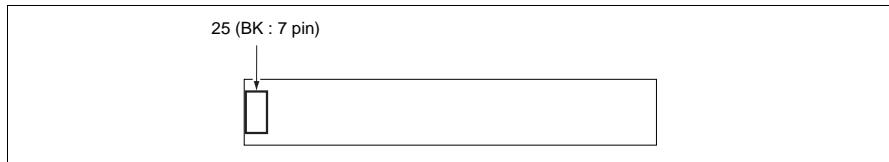
1. Punch drive board (PK-2)



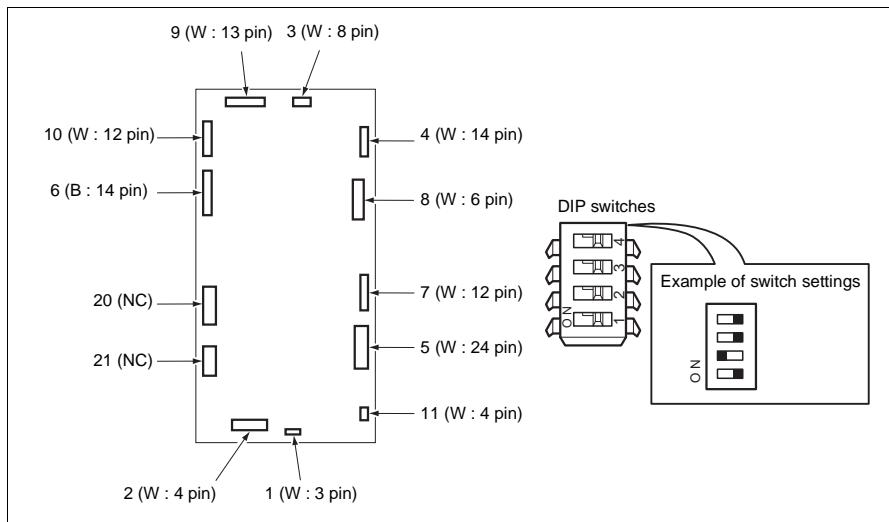
2. Punch drive board (PK-5)



3. Punch drive board



[6] ZK-2 Connector Layout Drawing



JAM CODE LIST

	Classification	Jam Code	Cause	Machine response	Countermeasure
Main body	By-pass	J10-1	PS44 (registration) does not turn ON within the predefined time after M6 (loop roller) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed .	Pull the paper out of the by-pass feed tray temporarily and remove the jammed paper.
		J10-2	PS44 (registration) has turned ON when by-pass feed starts.		
	Tray 1	J11-1	PS1 (paper feed /1) does not turn ON within the predefined time after MC3 (paper feed MC/1) has turned ON.		Open the vertical conveyance door on the main body and remove the jammed paper.
		J11-2	PS1 (paper feed /1) is ON and PS36 (loop) is OFF for the predefined time after MC4 (pre-registration MC/1) has turned ON.		Pull out the tray and remove the jammed paper.
	Tray 2	J11-3	PS25 (vertical conveyance /1) is turned ON while in the idling status.		Open the vertical conveyance door on the main body and remove the jammed paper.
		J11-5	PS1 (paper feed /1) is turned ON while in the idling status.		Pull out the tray and remove the jammed paper.
	Tray 3	J12-1	PS7 (paper feed /2) does not turn ON within the predefined time after MC5 (paper feed MC/2) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed .	Open the vertical conveyance door on the main body and remove the jammed paper.
		J12-2	PS7 (paper feed /2) is ON and PS26 (vertical conveyance /2) is OFF for the predefined time after MC6 (pre-registration MC/2) has turned ON.		Pull out the tray and remove the jammed paper.
		J12-3	PS26 (vertical conveyance /2) is turned ON while in the idling status.		Open the vertical conveyance door on the main body and remove the jammed paper.
		J12-5	PS7 (paper feed /2) is turned ON while in the idling status.		Pull out the tray and remove the jammed paper.
		J13-1	PS13 (paper feed 3) does not turn ON within the predefined time after MC7 (paper feed MC/3) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed.	Open the vertical conveyance door on the main unit and remove the jammed paper.
		J13-2	PS13 (paper feed /3) does not turn OFF, within the predefined time after MC8 (pre-registration MC/3) has turned ON.		Pull out the tray and remove the jammed paper.
		J13-3	PS27 (vertical conveyance /3) is turned ON while in the idling status.		Open the vertical conveyance door on the main body and remove the jammed paper.
		J13-5	PS13 (paper feed PS/3) is turned ON while in the idling status.		Pull out the tray and remove the jammed paper.

	Classification	Jam Code	Cause	Machine response	Countermeasure
LCT	LCT	J15-1	PS107 (LT first paper feed) does not turn ON within the predefined time after MC102 (LT first paper feed MC) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed.	Open the upper cover of the LCT and remove the jammed paper. Open the LCT jam access door and remove the jammed paper.
		J15-2	PS106 (LT paper feed) does not turn ON within the predefined time after MC101 (LT paper feed MC) has turned ON.		
	Main body	J15-3	PS106 (LT paper feed) is turned ON while in the idling status.	-	Open the front door and pull out the ADU stand. Then, open the registration loop jam processing section and ADU exit guide plate, and remove the jammed paper.
		J15-4	PS107 (LT first paper feed) is turned ON while in the idling status.		
Main body	Paper conveyance (all trays)	J17-1	PS44 (registration) does not turn ON within the predefined time after PS36 (loop) or PS50 (ADU pre-registration) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed.	Open the front door and pull out the ADU stand. Then, open the registration loop jam processing section and ADU exit guide plate, and remove the jammed paper.
	Paper conveyance (tray 1)	J17-2	PS36 (loop) does not turn ON within the predefined time after PS1 (paper feed PS/1) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed.	
	Paper conveyance (tray 2/3)	J17-3	PS36 (loop) does not turn ON within the predefined time after PS26 (vertical conveyance /2) has turned ON.	Open the vertical conveyance door on the main body and remove the jammed paper.	
	Paper conveyance (tray 2)	J17-4	PS26 (vertical conveyance /2) does not turn ON within the predefined time after PS7 (paper feed /2) has turned ON.		
	Paper conveyance (tray 3)	J17-5	PS26 (vertical conveyance /2) does not turn ON within the predefined time after MC8 (pre-registration MC/3) has turned ON.		
LCT	LCT	J17-8	PS36 (loop) does not turn ON within the predefined time after PS106 (LT paper feed) has turned ON.	Open the LT jam door and remove the jammed paper.	Open the LT jam door and remove the jammed paper.

ELECTRIC PARTS LIST

	Classification	Jam Code	Cause	Machine response	Countermeasure
Main body	Paper feed/conveyance	J17-9	PS43 (leading edge) is turned ON while in the idling status.	-	Open the vertical conveyance door and/or the front door on the main body and remove the jammed paper.
		J17-10	PS44 (registration) is turned ON while in the idling status.		
		J17-12	PS36 (loop) is turned ON while in the idling status.		
Vertical conveyance door	J19-1	Operating	The vertical conveyance door is opened while copying.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed	Open the vertical conveyance door on the main body and remove the jammed paper.
LCT	J19-2		The jam access door or the top cover is opened while copying.		Open the LT jam access door or the top cover and remove the jammed paper.
Main body	Drum	J21-1	Dmax has detected a paper while the print sequence is in motion.		Open the front door and pull out the ADU stand and remove the jammed paper.
		J21-2	Dmax sensor has detected a paper while in the idling status.	-	

	Classification	Jam Code	Cause	Machine response	Countermeasure
Main body	Second paper feed conveyance	J31-1	PS43 (leading edge) does not turn ON within the predefined time after MC1 (registration MC) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed	Open the front door and pull out the ADU stand and remove the jammed paper.
		J31-2	PS30 (fixing exit) does not turn ON within the predefined time after PS43 (leading edge) has turned ON.		
	Fixing/paper exit	J32-1	PS37 (paper exit) does not turn ON within the predefined time after PS30 (fixing exit) has turned ON.		
		J32-2	PS42 (paper reverse) does not turn ON within the predefined time after PS30 (fixing exit) has turned ON.		
		J32-3	PS42 (paper reverse) does not turn OFF within the predefined time after PS42 has turned ON.		
	Fixing/paper exit	J32-4	PS37 (paper exit) does not turn ON within the predefined time after PS42 (paper reverse) has turned OFF.		
		J32-5	PS37 (paper exit) does not turn OFF within the predefined time after PS37 has turned ON.		
	Stationary	J32-6	PS37 (paper exit) is turned ON while in the idling status.		
		J32-8	PS42 (paper reverse) is turned ON while in the idling status.		
		J32-9	PS30 (fixing exit) is turned ON while in the idling status.		
		J32-10	PS46 (reversal/exit) is turned ON while in the idling status.		
	Front door	J51-1	Front door on the right or on the left is opened while a job is being processed.	The machine stops immediately.	
RADF	EDH	J61-1	Open/close cover was opened while RADF is in motion.	RADF stops immediately. The machine stops after paper ejection if copying/copied paper is present.	Open the open/close cover and the paper feed unit to remove the jammed paper.
		J61-2	RADF was opened while RADF is in motion.		
		J62-1	PS304 (original registration /1) does not turn OFF within the predefined time after feeding of the single-side original has started.		

	Classification	Jam Code	Cause	Machine response	Countermeasure
RADF	EDH	J62-2	PS304 (original registration /1) does not turn OFF within the predefined time after feeding of the double-side original has started.	RADF stops immediately. The machine stops after paper ejection if copying/copied paper is present.	Open the open/close cover and the paper feed unit to remove the jammed paper.
		J62-3	PS305 (original registration /2) does not turn ON within the predefined time after feeding of the single-side original has started.		
		J62-4	PS305 (original registration /2) does not turn ON within the predefined time since reverse paper feed of the back side of the double-side copy has started.		
		J62-5	PS305 (original registration /2) does not turn ON within the predefined time since reverse paper feed of the front side of the double-side copy has started.		
		J62-6	PS305 (original registration /2) does not turn OFF within the predefined time since it has turned ON when feeding the paper for the single-side copy.		
		J62-7	PS305 (original registration /2) does not turn OFF within the predefined time since it has turned ON when processing the reverse paper feed for copying the back side of the double-side original.		
		J62-8	PS305 (original registration /2) does not turn OFF within the predefined time since it has turned ON when processing the reverse paper feed for copying the front side of the double-side original.		
		J62-9	PS306 (original conveyance) does not turn ON within the predefined time after re-feeding of the single-side original has started.		
		J62-10	PS306 (original conveyance) does not turn ON within the predefined time since reverse paper feed of the double-side copy has started.		
		J63-1	PS306 (original conveyance) does not turn OFF within the predefined time since it has turned ON when feeding the paper for the single-side copy.		

Classification	Jam Code	Cause		Machine response	Countermeasure
RADF	EDH	J63-2	Operating	PS306 (original conveyance) does not turn OFF within the predefined time since it has turned ON when processing the reverse paper feed for copying the back side of the double-side original.	RADF stops immediately. The machine stops after paper ejection if copying/copied paper is present.
		J63-3		PS306 (original conveyance) does not turn OFF within the predefined time since it has turned ON when processing the reverse paper feed for copying the front side of the double-side original.	
		J63-4		PS303 (original exit) does not turn ON within the predefined time after PS306 (original conveyance PS) has turned ON.	
		J63-5		PS303 (original exit PS) does not turn OFF within the predefined time since it has turned ON.	
		J65-1		PS304 (original registration) is turned ON while in the idling status.	
		J65-2		PS306 (original conveyance) is turned ON while in the idling status.	
		J65-4	Stationary	PS303 (original exit) is turned ON while in the idling status.	
		J65-8		PS305 (original registration /2) is turned ON while in the idling status.	
		J65-10		PS307 (original skew /F) is turned ON while in the idling status.	
		J65-20		PS308 (original skew /R) is turned ON while in the idling status.	
FNS	FN-113	J72-16	Operating	The Transport Unit Entrance Sensor (PC22) is not unblocked even after the lapse of a given period of time after the leading edge of the paper has unblocked the Paper Exit Sensor of the copier.	Machine stops immediately.
		J72-17		The Transport Unit Entrance Sensor (PC22) is not blocked even after the lapse of a given period of time after the paper has unblocked PC22.	
				The 1st Tray Exit Sensor (PC1) is not blocked even after the lapse of a given period of time after the paper has unblocked the Transport Unit Entrance Sensor (PC22).	

	Classification	Jam Code	Cause	Machine response	Countermeasure
FNS	FN-113	J72-17	The Upper Entrance Sensor (PC4) is not blocked even after the lapse of a given period of time after the paper has unblocked the Transport Unit Entrance Sensor (PC22).	Machine stops immediately.	Remove the jammed paper from the FNS or the main body.
			The Lower Entrance Sensor (PC2) is not blocked even after the lapse of a given period of time after the paper has unblocked the Transport Unit Entrance Sensor (PC22).		
			The Storage Sensor (PC3) is not blocked even after the lapse of a given period of time after the paper has blocked the Upper Entrance Sensor (PC4).		
			The Storage Sensor (PC3) is not blocked even after the lapse of a given period of time after the paper has blocked the Lower Entrance Sensor (PC2).		
			The Upper Entrance Sensor (PC4) is not unblocked even after the lapse of a given period of time after the paper has blocked PC4.		
			The Lower Entrance Sensor (PC2) is not unblocked even after the lapse of a given period of time after the paper has blocked PC2.		
		J72-18	The 1st Tray Exit Sensor (PC1) is not unblocked even after the lapse of a given period of time after the paper has blocked PC1.		
			The Storage Sensor (PC3) is not unblocked even after the lapse of a given period of time after the paper has blocked PC3.		
		J72-19	The Finisher Tray Paper Detecting Sensor (PC5) remains blocked even after the lapse of a given period of time as the paper on the Finisher Tray is fed out after a stapling operation.		

Classification	Jam Code	Cause	Machine response	Countermeasure
FNS	FN-6 / FN-112	J71-1 Front door of FNS or the top cover of PI has opened while a job is being processed.	Machine stops immediately.	Remove the jammed paper from the FNS or the main body.
	ZK-2	J71-3 The PZ front door is opened during copying		
	FN-6 / FN-112	J72-16 PS704 (FNS entrance) does not turn ON within the predefined time after PS37 (paper exit) has turned ON.		
		J72-17 PS706 (main tray paper exit) does not turn ON within the predefined time after PS704 (FNS entrance) has turned ON.		
		J72-18 PS705 (stacker entrance) does not turn ON within the predefined time after PS704 (FNS entrance) has turned ON. (Staple mode)		
		J72-19 PS705 (stacker rotation) does not turn OFF within the predefined time after M713 (stacker entrance) has turned ON.		
		J72-20 PS706 (main tray paper exit) does not turn ON within the predefined time after the paper ejection has started. (Staple mode)		
		J72-21 PS706 (main tray paper exit) does not turn OFF within the predefined time since it has turned ON. (Staple mode large-size paper)		
		J72-22 PS701 (sub-tray paper exit) does not turn ON within the predefined time after PS704 (FNS entrance) has turned ON. (Sub-tray paper exit mode)		
		J72-23 PS701 (sub-tray paper exit) does not turn OFF within the predefined time since it has turned ON. (Sub-tray paper exit mode)		
		J72-24 PS726 (folding passage) does not turn ON within the predefined time since stapling has completed.		
		J72-25 PS725 (folding exit) does not turn ON within the predefined time since M719 (folding knife) has turned ON.		
		J72-26 PS725 (folding exit) does not turn OFF within the predefined time since it has turned ON.		
		J72-27 PS720 (stacker no paper) is turned OFF when stapling starts.		

	Classification	Jam Code	Cause	Machine response	Countermeasure
FNS	FN-6 / FN-112	J72-28	PS705 (stacker entrance) does not turn OFF within the predefined time since it has turned ON.	Machine stops immediately.	Remove the jammed paper from the FNS or the main body.
		J72-29	PS706 (main tray paper exit) does not turn OFF within the predefined time since it has turned ON. (non-stapling mode)		
		J72-30	PS706 (main tray paper exit) does not turn OFF within the predefined time since it has turned ON. (Staple mode small-size paper)		
	Cover Inserter B	J72-35	PS206 (PI passage /L) does not turn ON within the predefined time after MC202 (conveyance MC/L) has turned ON.		
	ZK-2	J72-38	Leading/trailing/side edge PS on paper edge PS does not turn ON within the predefined time since PS37 (main body paper exit) has turned ON.	Remove any jammed paper in the PZ / main body.	Remove any jammed paper in the PZ / main body.
		J72-39	Leading/trailing/side edge PS on paper edge PS does not turn OFF within the predefined time since it has turned ON.		
		J72-40	PS1 (passage) does not turn ON within the predefined time since leading/trailing/side edge PS on paper edge PS has turned ON.		
		J72-41	PS1 (passage) does not turn OFF within the predefined time since it has turned ON. In Z-fold mode, during the 2nd folding operation, PS1 (passage) does not turn OFF within the predefined time after it has been turned ON.		
		J72-42	During the 2nd Z-fold exit operation, PS1 (passage) does not turn OFF within the predefined time since it has turned ON.		
	PK-2 / PK-5 / ZK-2	J72-43	PS801 (punch HP) does not turn ON within the predefined time after M801 (punch) has turned ON. Or, leading/trailing/side edge PS on paper edge PS does not turn OFF within the predefined time since M802 (Punch shift) has turned ON.		Remove the jammed paper from the FNS or the main body.

Classification	Jam Code	Cause	Machine response	Countermeasure
FNS Operating	ZK-2	PS8 (exit) does not turn ON within the pre-defined time since leading/trailing/side edge PS on paper edge PS has turned ON.	Machine stops immediately.	Remove any jammed paper in the PZ / main body.
		PS8 (exit) does not turn ON within the pre-defined time since PS37 (main body paper exit) has turned ON.		
		PS8 (exit) does not turn OFF within the predefined time since it has turned ON.		
		Remaining paper is detected in PZ after the predefined time has passed since PZ had received stop operation signal from the main body.		
	FN-6 / FN-112	PS726 (folding passage) does not turn OFF within the predefined time since it has turned ON.		Remove the jammed paper from the FNS or the main body.
	CoverInserter B	PS201 (PI passage /U) does not turn ON within the predefined time after MC201 (conveyance MC/U) has turned ON.		Open the top cover of PI and remove the jammed paper.
		PS704 (FNS entrance) does not turn ON within the predefined time after PS201 (PI passage /U) has turned ON.		
		PS704 (FNS entrance) does not turn ON within the predefined time after PS206 (PI passage /L) has turned ON.		
	ZK-2	Leading/trailing/side edge PS on paper edge PS does not turn OFF within the predefined time since M802 (Punch shift) has turned ON. Or, side edge PS corresponding to paper size on paper edge PS does not turn ON within the predefined time since leading/trailing/side edge PS on paper edge PS has turned OFF.		Remove any jammed paper in the PZ / main body.
		PS1 (passage) does not turn ON within the predefined time since leading/trailing/side edge PS on paper edge PS has turned ON.		
		PS8 (exit) does not turn ON within the pre-defined time since PS1 (passage) has turned ON.		
		M6 (conveyance) lost synchronism.		

	Classification	Jam Code	Cause	Machine response	Countermeasure
FNS	FN-6 / FN-112	J72-81	PS730 (stapler HP /R) and PS732 (clincher HP /R) do not turn ON within the predefined time after M709 (stapler /R) and M710 (clincher /R) have turned ON.	Machine stops immediately.	Remove the jammed paper from the FNS or the main body.
		J72-82	PS731 (stapler HP /F) and PS733 (clincher HP /F) do not turn ON within the predefined time after M714 (stapler /F) and M715 (clincher /F) have turned ON.		
		J72-83	PS730/731 (stapler HP /R, /F) and PS732/733 (clincher HP /R, /F) do not turn ON within the predefined time after M709/714 (stapler/R, /F) and M710/715 (clincher /R, /F) have turned ON.		
		J72-90	FNS does not stop within the predefined time since the stop signal has been transmitted to FNS from the main unit.		Remove the jammed paper from the FNS or the main body.
		J73-1	PS706 (main tray paper exit) is turned ON while in the idling status.		
		J73-2	PS705 (stacker entrance) is turned ON while in the idling status.		
		J73-5	PS704 (FNS entrance) is turned ON while in the idling status.		
		J73-7	PS701 (sub-tray paper exit) is turned ON while in the idling status.		
		J73-8	PS720 (stacker no paper) is turned ON when paper jam has occurred during paper ejection.		
		J73-9	PS726 (folding passage) is turned ON while in the idling status.		
Stationary		J73-10	PS725 (folding exit) is turned ON while in the idling status.		
	Cover Inserter B	J73-14	PS206 (PI passage /L) is turned ON while in the idling status.		
	ZK-2	J73-15	Any of the following sensors is ON during idling. <ul style="list-style-type: none">• Leading/trailing PS on paper edge PS• PS1 (passage)• PS8 (exit)		
Cover Inserter B		J73-17	PS201 (PI passage /U) is turned ON while in the idling status.		

Classification	Jam Code	Cause		Machine response	Countermeasure		
FNS	FN-113	Stationary	Storage Sensor PC3		Remove the jammed paper from the FNS or the main body.		
			Upper Entrance Sensor PC4				
			Lower Entrance Sensor PC2				
			1st Tray Exit Sensor PC1				
			Transport Unit Acceleration Sensor PC20				
			Transport Unit Deceleration Sensor PC21				
			Transport Unit Entrance Sensor PC22				
			Finisher Tray Paper Detecting Sensor PC5				
Main body	ADU	Operating	PS46 (reverse/exit) does not turn ON within the predefined time after PS42 (paper reverse) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed	Open the front door and pull out the ADU unit and remove the jammed paper.		
			PS45 (ADU paper reverse) is turned ON while in the idling status.				
			PS48 (ADU conveyance /2) does not turn ON within the predefined time after PS46 (reverse /exit) has turned OFF.				
		Stationary	PS48 (ADU conveyance /2) is turned ON while in the idling status.	-			
			PS50 (ADU pre-registration) is turned ON while in the idling status.				
		Operating	PS49 (ADU deceleration) does not turn ON within the predefined time after PS48 (ADU conveyance /2) has turned ON.	The machine stops immediately after paper ejection has completed when jamming occurs while a job is being processed			
			PS50 (ADU pre-registration) does not turn ON within the predefined time after PS49 (ADU deceleration) has turned ON again.				
		Stationary	PS49 (ADU deceleration) is turned ON while in the idling status.	-			

ERROR CODE LIST

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Drive	F13-01 Error detection signal is detected continuously for one second when two seconds have passed since M1 (paper feed) has turned ON.	The machine stops immediately and turns OFF RL1 (main).	M1 (paper feed) PRCB (printer control board)
		F13-02 Error detection signal is detected continuously for one second when two seconds have passed since M101 (LT paper feed) has turned ON.		M101 (LT paper feed) LTDB (LT drive board)
	Tray 1	F18-10 Error detection signal for M16 (tray up drive /1) is detected while M16 is turned ON.	M16 (tray up drive /1) PRCB (printer control board) PS2 (tray upper limit/1)	
		F18-11 PS2 (tray upper limit/1) does not turn ON within 20 seconds since the lifting motion triggered by activating M16 (tray up drive /1) has started while PS2 is turned OFF.		
	Tray 2	F18-20 Error detection signal for M17 (tray up drive /2) is detected while M17 is turned ON.	M17 (tray up drive /2) PRCB (printer control board) PS8 (tray upper limit/2)	
		F18-21 PS8 (tray upper limit/2) does not turn ON within 20 seconds since the lifting motion triggered by activating M17 (tray up drive /2) has started while PS8 is turned OFF.		
	Tray 3	F18-30 Error detection signal for M18 (tray up drive /3) is detected while M18 is turned ON.	M18 (tray up drive /3) PRCB (printer control board) PS14 (tray upper limit/3)	
		F18-31 PS14 (tray upper limit/3) does not turn ON within 20 seconds since the lifting motion triggered by activating M18 (tray up drive /3) has started while PS14 is turned OFF.		
LCT	LCT	F18-50 Error detection signal for M100 (LT up/down) is detected continuously for one second while M100 is turned ON.	The machine stops immediately and turns OFF RL1 (Main).	M100 (LT up/down) LTDB (LT drive board) PS101 (LT lower limit detection) PS109 (LT upper limit detection)
		F18-51 PS109 (LT upper limit detection) or PS101 (LT lower limit detection) does not turn ON within 35 seconds since the lifting or descent motion triggered by activating M100 (LT up/down) has started while PS109 or PS101 is turned OFF.		

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	By-pass feed	F18-60 PS34 (tray upper limit/BP) or PS35 (tray lower limit/BP) does not turn ON within 10 seconds since the upward or downward motion triggered by activating M20 (up/down/BP) has started while PS34 or PS35 is turned OFF.	No error code is displayed on the operation panel. The code is registered in data collection.	M20 (up/down/BP) PRCB (printer control board) PS34 (tray upper limit/BP) PS35 (tray lower limit/BP)
	Wire cleaning abnormality	F21-01 The lock signal for M14 (charger cleaning) is not detected when more than 25 seconds have passed since the return motion (back to front) of M14 has started.	The machine stops immediately and turns OFF RL1 (main).	M14 (charger cleaning) PRCB (printer control board)
		F21-02 The lock signal for M14 (charger cleaning) is detected within 2 seconds since the return motion (back to front) of M14 has started.		M14 (charger cleaning) PRCB (printer control board)
		F21-03 The lock signal for M14 (charger cleaning) is not detected when more than 25 seconds have passed since the return motion (back to front) of M14 has started while re-try process is in motion after lock detection.		
		F21-05 The lock signal for M10(transfer/separation cleaning) is not detected when more than 25 seconds have passed since the return motion (back to front) of M10 has started.		M10 (transfer/separation cleaning) ADUDB (ADU drive board) PRCB (printer control board)
		F21-06 The lock signal for M10 (transfer/separation cleaning) is detected within 2 seconds since the return motion (back to front) of M10 has started.		
		F21-07 The lock signal for M10 (transfer/separation cleaning) is not detected when more than 25 seconds have passed since the return motion (back to front) of M10 has started while re-try process is in motion after lock detection.		

ELECTRIC PARTS LIST

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Fan abnormality	F22-01	An error for SFAN_EM signal is detected when 2 seconds have passed since FM4 (developing suction) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.	The machine stops immediately and turns OFF RL1 (main).	FM4 (developing suction) PRCB (printer control board)
		F22-02	An error for CLEAN_EM signal is detected when 2 seconds have passed since FM5 (cleaner cooling) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.		FM5 (cleaner cooling) ADUDB (ADU drive board) PRCB (printer control board)
	Motor abnormality	F23-01	An error for TONERM_EM signal is detected when 7 seconds have passed since M13 (toner bottle) has turned ON.		M13 (toner bottle) PRCB (printer control board)
		F23-02	An error for DEVM_EM signal is detected when more than 1 second has passed since M3 (developing) has turned ON.		M3 (developing) PRCB (printer control board)
		F23-03	An error for DRUM_EM signal is detected when more than 3 seconds have passed since M2 (drum) has turned ON.		M2 (drum) PRCB (printer control board)
	High-voltage power error	F28-01	5 consecutive charging ON/OFF operations have been executed since the charging error detection signal has been detected while charging is turned ON.		HV (high-voltage unit)
		F28-02	5 consecutive transfer ON/OFF operations have been executed since the transfer error detection signal has been detected while transfer is turned ON.		
		F28-03	5 consecutive separation ON/OFF operations have been executed since the separation error detection signal has been detected while separation is turned ON.		

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main Unit	F29-01	Dirt correction failure of the Dmax sensor during maximum density adjustment. If this error is detected 10 successive times, the error code is displayed.	The machine stops immediately and turns OFF RL1 (main).	TSCB (toner control sensor board) PRCB (printer control board)
	F29-03	Control patches are not output while Dmax correction is in process. (No output from the Dmax sensor.)	No error code is displayed on the operation panel. The code is registered in data collection. Main body control is performed using previous data.	TSCB (toner control sensor board) PRCB (printer control board)
	F29-04	Dirt correction failure of the γ sensor during γ adjustment. If this error is detected 10 successive times, the error code is displayed.	The machine stops immediately and turns OFF RL1 (main).	
	F29-05	Control patches are not output while γ correction is in process. (No output from the γ sensor.)	No error code is displayed on the operation panel. The code is registered in data collection. Main body control is performed using previous data.	
	F29-06	A recurrence error occurred when carry out γ curve for γ correction.	No error code is displayed on the operation panel. The code is registered in data collection. Main body control is performed using previous data.	
	F29-07	Dirt correction failure of the γ sensor during dot diameter adjustment. If this error is detected 10 successive times, the corresponding error code is displayed.	The machine stops immediately and turns OFF RL1 (main).	
	F29-08	The dot diameter correction ended with error value.	No error code is displayed on the operation panel. The code is registered in data collection. Main body control is performed using previous data.	TCSB (toner control sensor board) PRCB (printer control board)
	F32-01	An error for SUC_EM signal is detected when 2 seconds have passed since FM3 (conveyance suction) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.	The machine stops immediately and turns OFF RL1 (main).	FM3 (conveyance suction) ADUDB (ADU drive board) PRCB (printer control board)

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts	
Main body	Fan abnormality	F32-02	An error for FIXFAN1_EM signal is detected when 2 seconds have passed since FM8 (main unit cooling /2) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.	The machine body stops immediately and turns OFF RL1 (main).	FM8 (main cooling /2) PRCB (printer control board)	
		F32-03	An error for FIXFAN2_EM signal is detected when 2 seconds have passed since FM7 (paper exit /R) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.		FM7 (paper exit /R) PRCB (printer control board)	
		F32-04	An error for FIXFAN3_EM signal is detected when 2 seconds have passed since FM6 (paper exit /F) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.		FM6 (paper exit /F) PRCB (printer control board)	
	Motor abnormality	F33-01	Error detection signal is detected continuously for 1 second when 2 seconds have passed since M5 (conveyance) has turned ON.		M5 (conveyance) PRCB (printer control board)	
		F34-01	TH1 (fixing temperature /1) detects more than 220°C for five consecutive times in 1 second cycle.		PRCB (printer control board) DCPS (DC power supply unit) L2 (fixing heater lamp/1) L3 (fixing heater lamp/2) TH1 (fixing temperature /1) TH2 (fixing temperature /2)	
		F34-02	The output voltage of TH1 (fixing temperature /1) and TH2 (fixing temperature /2) is detected as abnormally high at the comparator circuit (more than 228°C).			
	Low fixing temperature abnormality	F35-01	TH1 (fixing temperature /1) has not reached the predefined temperature when the specified time has passed since the fixing ON control has been processed after SW2 (sub power) is turned on.			
		F35-02	TH1 (fixing temperature /1) detects less than 120°C for 5 consecutive times in 1 second cycle while the fixing ON control is processed after warm-up operation is complete.			
		F35-03	The output voltage of TH1 (fixing temperature /1) is detected as abnormally low at the comparator circuit (less than -6°C).			

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Fixing sensor abnormality	F36-01 TH1 (fixing temperature /1) has not reached 50°C when the specified time has passed since the fixing ON control has been processed after SW2 (sub power) is turned on. F36-02 The output voltage of TH2 (fixing temperature /2) is detected as abnormality low (less than -6°C) or abnormally high (more than 240.5°C) at the comparator circuit.	The machine body stops immediately and turns OFF RL1 (main).	PRCB (printer control board) DCPS (DC power supply unit) L2 (fixing heater lamp/1) L3 (fixing heater lamp/2) TH1 (fixing temperature /1) TH2 (fixing temperature /2)
	Scanner abnormality	F41-01 PS61 (scanner HP) does not turn ON within 5 seconds since M11 (scanner) has turned ON.		M11 (scanner) PS61 (scanner HP) SCDB (scanner drive board) PRCB (printer control board)
	Motor abnormality	F41-02 The lock signal for M15 (polygon) is not detected within 25 seconds from the switch drive when M15 starts or when switching the rotation speed.		M15 (polygon) PMDB (polygon drive board) PRCB (printer control board)
	Fan abnormality	F42-01 An error for EM signal is detected when 2 seconds have passed since FM9 (scanner cooling) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.		FM9 (scanner cooling) SCDB (scanner drive board) PRCB (printer control board)
		F42-02 An error for WRFAN1_EM signal is detected when 2 seconds have passed since FM2 (write section cooling) has turned ON. The error does not clear after 2 seconds from the OFF/ON operation.		FM2 (write section cooling) PRCB (printer control board)

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Image control abnormality	E46-01	<p>During image write, APC cannot be performed for sub-scanning beam correction.</p> <p>The 12 VDC power for driving the laser is not supplied.</p> <p>The laser does not turn ON due to defective laser, or MPC value is different.</p> <p>The index sensor cannot detect the laser because the polygon mirror does not rotate, the index sensor is displaced, or the index sensor is defective.</p>	If copy operation is being performed, the machine stops after paper ejection. RL1 (main) is turned OFF.	Write section ICB (image control board) power connector
		E46-02	Illegal address of FIFO for scanner. During image read, image data compression is not completed normally.		ICB (image control board) Expansion memory
		E46-03	Illegal address of FIFO for printer. During image read, image data decompression is not completed normally.		
		E46-05	The FIFO of the compression / expansion chip caused an error interrupt.		
		E46-06	Decompression error of image data.		
		E46-08	When APC is performed, the index sensor output does not change.		Write section ICB (image control board) power connector
		E46-12	Compression of the read image and decompression in the page memory are not completed within the specified time after negation of SVV.		ICB (image control board)
	Image control abnormality	E46-13	During image read, image data compression from the scanner to the memory is not completed within the specified time. Image data decompression from the scanner to the page memory is not completed within the specified time. SVV is not detected within the specified time.		PRCB (printer control board) ICB (image control board)

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	E46-14	During image read, image data decompression from the memory to the printer is not completed within the specified time. Image data output from the page memory to the printer is not completed within the specified time. PVV is not detected within the specified time.	If copy operation is being performed, the machine stops after paper ejection. RL1 (main) is turned OFF.	PRCB (printer control board) ICB (image control board)
	E46-15	During image write, improper processing was performed. For example, the decompression device was accessed although there was no resource.		ICB (image control board) ICB program
	E46-16	During image read, improper processing was performed. For example, the compression device was accessed although there was no resource.		
	E46-17	During image processing, a filter coefficient could not be generated properly.		
	E46-19	During access to the memory device, a software error was detected.		
	E46-21	Decompression from the memory to the page memory is not completed within the specified time. Compression from the page memory to the memory is not completed within the specified time. Decompression from the memory to the page memory is not completed within the specified time. Compressed data transfer between memories is not completed within the specified time.		PRCB (printer control board) ICB (image control board) ICB program
	E46-23	During image read, SVV is not turned OFF within the specified time and therefore preparation for next page scanning cannot be started.		ICB (image control board)
	E46-24	Shading correction error (GA error)		ICB (image control board) ICB program

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	E46-25	AOC/AGC error <ul style="list-style-type: none"> • The light blocking cover and lens cover are removed from the scanner section. • The A/D converter board connector is disconnected. • The power cable of A/D converter board is disconnected. • The IC protector on the A/D converter board is blown out. • The exposure lamp intensity is excessive. • The exposure lamp does not light. 	If copy operation is being performed, the machine stops after paper ejection. RL1 (main) is turned OFF.	ADB (A/D conversion board) L1 (exposure lamp)
	E46-26	Correction data saved on a resolution basis is not found.	Error code is not displayed on the operation panel. It is displayed only in data collection.	ICB (image control board)
	E46-27	The density correction γ curve cannot be generated properly.		
	E46-29	Calibration start error.	If copy operation is being performed, the machine stops after paper ejection. RL1 (main) is turned OFF.	ICB (image control board) ICB program
	E46-30	Calibration end error		
	E46-31	An attempt was made to perform APC initial sampling before completion of MPC.		
	E46-32	An attempt was made to perform MPC during APC.		
	E46-33	An attempt was made to perform sub-scan beam correction before completion of APC or MPC.		
	E46-34	An attempt was made to perform sub-scan beam interval correction although the image write clock was abnormal.		
	E46-35	Dual page memory area error Due to the image area abnormality on the memory, image is not decompressed on the memory.		
	F46-40	Hard disk initialization abnormality Hard disk failure, or poor connection of connectors	The machine stops immediately and RL1 (main) turns OFF.	ICB (image control board) ICB program HDD (hard disk drive)
	F46-41	Job information could not be stored on the hard disk.		
	F46-42	A route could not be opened during hard disk job automatic deletion.		

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	F46-43	Hard disk access failure Hard disk failure or poor connection of connectors	The machine stops immediately and RL1 (main) turns OFF.	ICB (image control board) ICB program HDD (hard disk drive)
	F46-50	Communication error is detected during the tandem operation.		ICB (image control board) ICB program Around the tandem cable
	F46-51	An error is detected during the data transfer of tandem image.		
	F46-60	Adjustment of the sub-scan beam interval is not completed within the specified number of time for the following reason: • Defective index sensor • Abnormal 12 VDC power supply • M15 (polygon) driving failure	Error code is not displayed on the operation panel. It is displayed only in data collection.	Write section
	F46-61	Scanning started before completion of original auto skew correction. (Skew correction was not in time).		PRCB (printer control board) PS311 (original mis-centering /F) PS311 (original mis-centering /R)
	F46-62	Printing started before correction of auto paper mis-centering. (Mis-centering correction was not in time).		PS1 (paper mis-centering detection PS)
	F46-63	AGC was retried because of reduction in exposure lamp intensity, but no error occurred.		L1 (exposure lamp)
	F46-64	The PWM γ curve could not be generated properly.		TCSB (toner control sensor board)
	E46-80	The message queue was insufficient or destroyed.	If copy operation is being performed, the machine stops after paper ejection. RL1 (main) is turned OFF.	ICB (image control board)
	E46-81	The parameter value is too large.		ICB (image control board) Expansion memory contact failure
	E46-82	The ID of message queue source task is undefined.		
	E46-83	The message reception event is undefined.		
	E46-90	The access to the memory is illegal.		ICB (image control board) Expansion memory

ELECTRIC PARTS LIST

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Image control abnormality	E46-91 The header read address is illegal.	If copy operation is being performed, the machine stops after paper ejection. RL1 (main) is turned OFF.	ICB (image control board) Expansion memory
		E46-99 E-RDH memory initialization error E-RDH memory may not be connected properly.		
	Communication abnormality	E50-01 Main body drive serial input error 1. Serial data is not received from the main body drive section within 0.5 second after reception of power-on ACK.	The machine stops immediately. RL1 (main) is turned OFF.	PRCB (printer control board)
		E50-02 Main body drive serial input error 2. Serial data is not received from the main body drive section within 0.5 second after reception of power-on ACK.		
		E50-03 Main body drive serial input error 3. Serial data is not received from the main body drive section within 0.5 second after reception of power-on ACK.		
		E50-04 Main body drive serial input error 4. Serial data is not received from the main body drive section within 0.5 second after reception of power-on ACK.		
		E50-05 Drive board communication reception error detection fault. A reception error occurred during reception of drive board serial data, or a data checksum error or ID information error occurred four consecutive times although a resent request had been issued three times.		PRCB (printer control board) Drive boards
	E50-10 Image control board communication error. Initial data is not received from ICB (image control board) within 10 seconds after power-on.	Image control board communication error. Initial data is not received from ICB (image control board) within 10 seconds after power-on.	The machine stops immediately. RL1 (main) is turned OFF.	PRCB (printer control board) ICB (image control board)
				ICB (image control board)

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Fan abnormality	F52-01	FM13 (power supply cooling) EM signal was abnormal 2 seconds after turning ON FM13. 2 seconds after turning FM13 OFF and ON again, the signal is still abnormal.	The machine stops immediately. RL1 (main) is turned OFF.	FM13 (power supply cooling) DCPS (DC power supply unit)
		F52-02	The MAINFAN_EM signal was abnormal 2 seconds after turning ON FM1 (main body cooling /1). 2 seconds after turning OFF and ON again, the signal is still abnormal.		FM1 (main body cooling /1) PRCB (printer control board)
	Motor abnormality	F53-01	5 seconds or later after turning ON M4 (fixing), an abnormal MAINM_EM signal has been detected for 1 consecutive second.		M4 (fixing) PRCB (printer control board)
	Operation panel abnormality	E56-02	Communication between the ICB (image control board) and OB1 (operation board 1) does not start within 30 seconds after SW2 (sub power) turns ON.	Operation panel does not display normally.	ICB (image control board) OB1 (operation board 1)
RADF	Fan Abnormality	F62-01	FM301 (original conveyance motor cooling) EM signal was abnormal 2 seconds after turning ON FM301. 2 seconds after turning FM301 OFF and ON again, an abnormal detection signal is detected.	The machine stops immediately and RL1 (main) is turned OFF.	SCDB (scanner drive board) FM301 (original conveyance motor cooling)
FNS	FN-113 abnormality	SC77-01	The Shift Home Position Sensor (PC10) does not go HIGH even after the lapse of a given period of time after M8 has been energized (to start returning the Elevator Tray to its home position). The Shift Home Position Sensor (PC10) does not go LOW even after the lapse of a given period of time after M8 has been energized (to start moving the Elevator Tray for job offset).		PC10 (Shift Home Position Sensor) PC11 (Shift Motor Pulse Sensor) M8 (Shift Motor) PWB-A (Control Board)
		SC77-02	The Elevator Tray Upper Limit Sensor PQ (PWB-F) does not go LOW even after the lapse of a given period of time after M7 has been energized (to start raising the Elevator Tray). The Elevator Tray Upper Limit Switch (S2) or Elevator Tray Lower Limit Switch (S3) remains actuated for a given period of time after M7 has been energized.		PWB-F (Elevator Tray Upper Limit Sensor PQ) S2 (Elevator Tray Upper Limit Switch) S3 (Elevator Tray Lower Limit Switch) M7 (Elevator Motor) PWB-A (Control Board)

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
FNS	FN-113 abnormality	SC77-03	The CD Aligning Home Position Sensor (PC9) does not go HIGH even after the lapse of a given period of time after M5 has been energized (to start returning the Aligning Plate to its home position).	The machine stops immediately and RL1 (main) is turned OFF.	PC9 (CD Aligning Home Position Sensor) M5 (CD Aligning Motor) PWB-A (Control Board)
		SC77-04	The Exit Roll Home Position Sensor (PC13) does not go HIGH even after the lapse of a given period of time after M13 has been energized (to start spacing/pressure sequence).		PC13 (Exit Roll Home Position Sensor) M13 (Exit Roller/Rolls Spacing Motor) PWB-A (Control Board)
		SC77-05	The Storage Roller Home Position Sensor (PC12) does not go HIGH even after the lapse of a given period of time after M12 has been energized (to start spacing/pressure sequence).		PC12 (Storage Roller Home Position Sensor) M12 (Storage Roller/Rolls Spacing Motor) PWB-A (Control Board)
		SC77-06	The Staple Home Position Sensor (PC14) does not go HIGH even after the lapse of a given period of time after M6 has been energized (to start returning the Stapling Unit to its home position).		PC14 (Staple Home Position Sensor) M6 (Stapling Unit Moving Motor) PWB-A (Control Board)
		SC77-11	Stapling Motor 2 is not deenergized even after the lapse of a given period of time after it has been energized (to start a stapling sequence).		PWB-A (Control Board) Stapling Unit 2
		SC77-12	Stapling Motor 1 is not deenergized even after the lapse of a given period of time after it has been energized (to start a stapling sequence).		PWB-A (Control Board) Stapling Unit 1
		SC77-54	The Punch Motor Pulse Sensor (PC15) does not go from LOW to HIGH, or vice versa, even after the lapse of a given period of time after M11 has been energized.		PC15 (Punch Motor Pulse Sensor) M11 (Punch Motor) PWB-A (Control Board)
		SC77-55	The Hole Punch Position Switch (S4) is not actuated or deactivated even after the lapse of a given period of time after M14 has been energized. *1 : U.S.A. and Canada only		Punch Unit M14 (Hole Position Selector Motor) PWB-A (Control Board)

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
FNS	FN-113 abnormality	SC77-81 The Transport Unit Entrance Switching Sensor (PC23) does not go from LOW to HIGH even after the lapse of a given period of time after M17 has been energized to select the U path. The Transport Unit Entrance Switching Sensor (PC23) does not go from HIGH to LOW even after the lapse of a given period of time after M17 has been energized to select the straight path.	The machine stops immediately and RL1 (main) is turned OFF.	PC23 (Transport Unit Entrance Switching Sensor) M17 (Transport Unit Entrance Switching Motor) PWB-A (Control Board)
	FN-6 / FN-112 abnormality	E70-1 Communication error		FNSCB (FNS control board) Connector
		E70-2 Start response error.		FNSCB (FNS control board) M702 (shift) PS718 (shift HP)
		F77-1 The shift unit does not reach the shift position or the HP within the specified time.		FNSCB (FNS control board) M703 (tray up/down) PS702 (tray upper limit) PS707 (stapler paper exit upper limit)
		F77-2 After M703 (tray up/down) starts operation, PS702 (tray upper limit) or PS707 (stapler paper exit upper limit) does not turn ON within the specified time.		FNSCB (FNS control board) RB (relay board) M705 (alignment /U) PS708 (alignment HP/U)
		F77-3 After M705 (alignment /U) starts operation, PS708 (alignment HP/U) does not turn OFF within the specified time, or does not turns ON after OFF.		FNSCB (FNS control board) M707 (paper exit roller)
		F77-4 After M707 (paper feed roller) starts operation, it does not reach the prescribed speed within the specified time.		FNSCB (FNS control board) M708 (paper exit opening) PS712 (paper exit opening HP)
		F77-5 After M708 (paper exit opening) starts operation, its open/close operation does not finish within the specified time. PS712 (paper exit opening HP) does not turn ON or OFF.		FNSCB (FNS control board) RB (relay board) M711 (stapler movement) PS711 (stapler movement HP)
		F77-6 After M711 (stapler movement) starts operation, PS711 (stapler movement HP) does not turn OFF, or does not turn ON after OFF.		FNSCB (FNS control board) RB (relay board) M704 (clincher rotation) PS714 (clincher rotation HP)
		F77-7 After M706 (stapler rotation/R) starts operation, PS713 (stapler rotation HP) does not turn OFF, or does not turn ON after OFF.		FNSCB (FNS control board) RB (relay board) M706 (stapler rotation /R) PS713 (stapler rotation HP)

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
FNS	FN-6 / FN-112 abnormality	F77-11	After M714 (stapler /F) starts operation, PS731 (stapler HP/F) does not turn ON within the specified time.	The machine stops immediately and RL1 (main) is turned OFF.	FNSCB (FNS control board) RB (relay board) M714 (stapler /F) PS731 (stapler HP/F)
		F77-12	After M709 (stapler /R) starts operation, PS730 (stapler HP/R) does not turn ON within the specified time.		FNSCB (FNS control board) RB (relay board) M709 (stapler /R) PS730 (stapler HP/R)
		F77-13	After M715 (clincher /F) starts operation, PS733 (clincher HP/F) does not turn ON within the specified time.		FNSCB (FNS control board) RB (relay board) M715 (clincher /F) PS733 (clincher HP/F)
		F77-14	After M710 (clincher /R) starts operation, PS732 (clincher HP/R) does not turn ON within the specified time.		FNSCB (FNS control board) M710 (clincher /R) PS732 (clincher HP/R)
		F77-21	After M718 (folding stopper) starts operation, PS723 (folding stopper HP) does not turn ON within the specified time.		FNSCB (FNS control board) RB (relay board) M718 (folding stopper) PS723 (folding stopper HP)
		F77-22	After M716 (alignment /L) starts operation, PS724 (alignment HP/L) does not turn ON within the specified time.		FNSCB (FNS control board) RB (relay board) M716 (alignment /L) PS724 (alignment /L)
		F77-25	After M719 (folding knife) starts the HP detecting operation, PS722 (folding knife HP) does not turn ON within the specified time.		FNSCB (FNS control board) M719 (folding knife) PS722 (folding knife HP)
		F77-26	After M720 (folding conveyance) starts operation, it does not reach the prescribed speed within the specified time.		FNSCB (FNS control board) M720 (folding conveyance)
	Cover Inserter B abnormality	F77-41	After M202 (tray up/down /L) starts operation, PS209 (tray upper limit /L) or PS210 (tray lower limit /L) do not turn ON within the specified time.		FNSCB (FNS control board) PIDB (PI drive board) M202 (tray up/down /L) M209 (tray upper limit /L) PS210 (tray lower limit /L)
		F77-42	After M201 (tray up/down/ U) starts operation, PS204 (tray upper limit /U) or PS205 (tray lower limit /U) do not turn ON within the specified time.		FNSCB (FNS control board) PIDB (PI drive board) M201 (tray up/down /U) PS204 (tray upper limit /U) PS205 (tray lower limit /U)
		F77-43	After M203 (PI conveyance) starts operation, it does not reach the prescribed speed within the specified time.		FNSCB (FNS control board) M203 (PI conveyance)

Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
FNS	PK-5 abnormality	F77-44 PS803 (punch shift HP) does not turn ON within the specified time after M802 (punch shift) operation has been started.	The machine stops immediately and RL1 (main) is turned OFF.	FNSCB (FNS control board) PKDB (PK drive board) M801 (punch) PS803 (punch HP)
	ZK-2 + A Kit. abnormality	F77-46 EM signal abnormality is detected within the specified time after FM701 (stacker fan) is turned ON.		RB (relay board) FNSCB (FNS control board) FM701 (stacker fan)
	FNS + PK-5 abnormality	F77-47 Communication abnormality occurred between FNS and PK-5. Abnormality remains even when retry operation is executed four times.		RB (relay board) FNSCB (FNS control board) PKDB (PK drive board)
	ZK-2 + A Kit. abnormality	F77-52 PS3 (1st stopper HP) does not turn ON within the specified time after M2 (1st stopper) has searched the HP.		PZCB (PZ control board) M2 (1st stopper) PS3 (1st stopper HP)
		F77-53 PS2 (2nd stopper HP) does not turn ON within the specified time after M3 (2nd stopper) has searched the HP.		PZCB (PZ control board) M3 (2nd stopper) PS2 (2nd stopper HP)
	PK-2 / PK-5 abnormality	F77-54 After MC801 (punch) starts operation, PS801 (punch HP) does not turn ON within the specified time.		FNSCB (FNS control board) PKDB (PK drive board) M801 (punch) PS801 (punch HP)
	ZK-2 abnormality	F77-55 PS4 (punch shift HP) does not turn ON within the specified time after M5 (punch shift) has started to search the HP.		M5 (punch shift) PS4 (punch shift HP) PZCB (PZ control board)
		F77-56 Abnormality is found in EM signal of M10 (conveyance motor fan) within the specified time after M10 has been turned ON, and the abnormality remains even when retry operation is executed 3 times after it is turned OFF.		M10 (conveyance motor fan) PZCB (PZ control board)
		F77-57 M4 (punch) does not turn OFF within the specified time after it has started the operation.		M4 (punch) PZCB (PZ control board)
	FN-6 / FN-112 abnormality	F77-81 After MC712 (gate drive) starts operation, PS716 (gate HP) does not turn ON within the specified time or does not turn OFF after ON.		FNSCB (FNS control board) RB (relay board) M712 (gate drive) PS716 (gate HP)
		F77-91 Communication abnormality in FNS CB (FNS control board) when sub-CPU receives data.		FNS CB (FNS control board)
		F77-92 Communication abnormality in FNS CB (FNS control board) when main CPU receives data.		

ELECTRIC PARTS LIST

	Classification	Warning Code	Cause	Machine response	Estimated abnormal parts
Main body	Communication abnormality	E80-01	No response from PRCB (printer control board) for 5 seconds after SW2 (sub power) is turned ON.	The machine stops immediately and RL1 (main) is turned OFF.	PRCB (printer control board)
		E80-02	Communication abnormality in PRCB (printer control board).		PRCB (printer control board)
		E80-03	Communication abnormality in operation unit.		OB1 (operation board /1)
	ISW abnormality	F80-11	When SW2 (sub power) was turned ON, an area which had not been written by ISW was detected in the printer control program.		PRCB program
		F80-30	When data is transferred by ISW, normal header information cannot be received within the specified time.		Printer cable PC parallel port
		F80-31	When data is transferred by ISW, a checksum error or header error was detected in the downloaded data.		Printer cable Program file error
		F80-32	When data is transferred by ISW, data cannot be written to the flash ROM properly.		Printer cable Program transfer destination board
		F80-40	When SW2 (sub power) was turned ON, an area which had not been written by ISW was detected in the FNS program.		FNS program
	ADU stand abnormality	E90-01	ADU drive serial input error 1. Serial data from ADUDB (ADU drive board) (ID=0) cannot be received from ACK within 0.5 second when SW2 (sub power) turns ON.		ADUDB (ADU drive board)
		E90-02	ADU drive serial input error 2. Serial data from ADUDB (ADU drive board) (ID=7) cannot be received from ACK within 0.5 second when SW2 (sub power) turns ON.		
	Fan abnormality	F92-01	The FM10 (ADU reverse motor cooling) EM signal was abnormal 2 seconds after turning ON of FM10. 2 seconds after turning FM10 OFF and ON again, the signal is still abnormal.		FM10 (ADU reverse motor cooling) ADUDB (ADU drive board) PRCB (Printer control board)

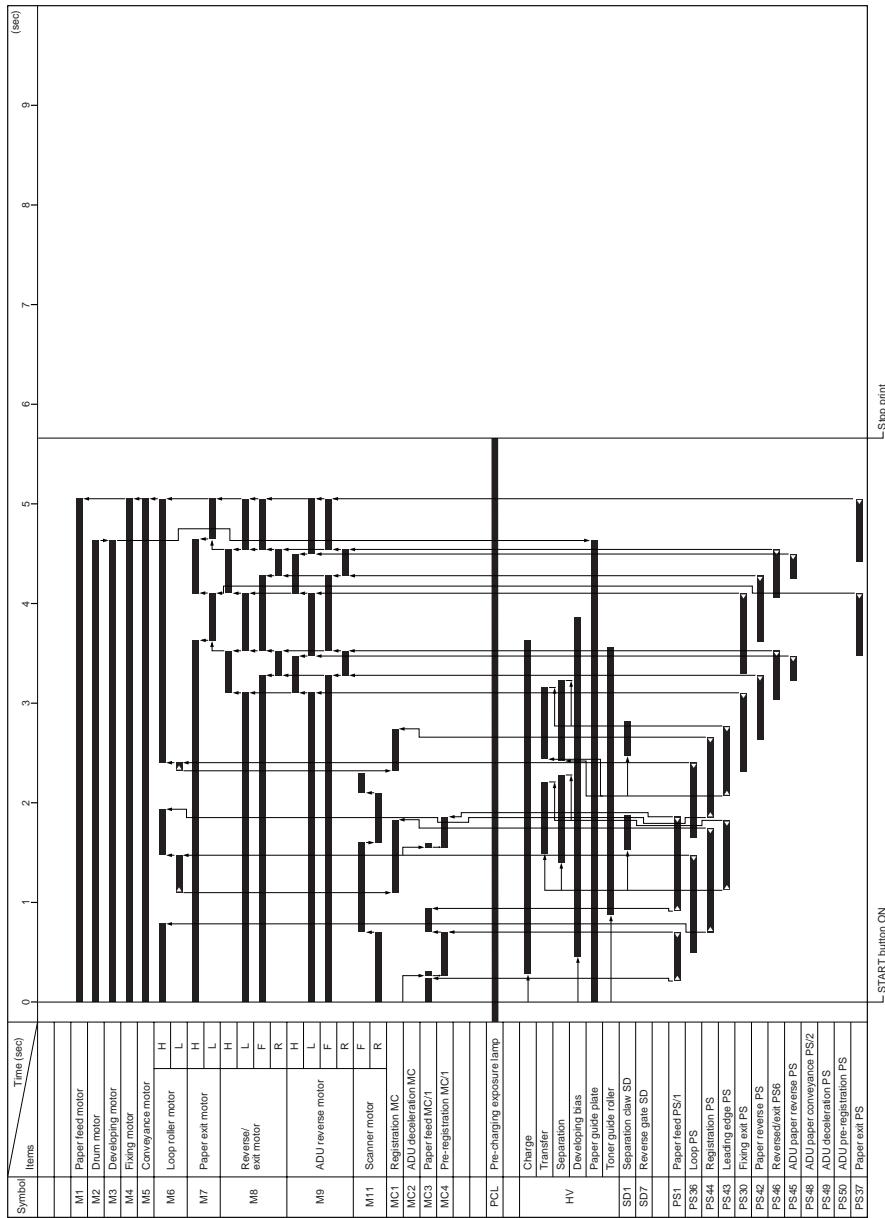
For the following abnormalities, the user can disconnect the faulty unit temporarily to continue using the machine.

When an abnormality occurs, press the reset button following the LCD message, and turn the SW2 (sub power) OFF/ON. This allows temporary use of machine until the SW2 (sub power) is turned OFF/ON next time.

Warning code	Cause	Unit to be disconnected
F18-10	Tray 1 up drive motor abnormality	Tray 1
F18-11	Tray 1 up abnormality	
F18-20	Tray 2 up drive motor abnormality	Tray 2
F18-21	Tray 2 up abnormality	
F18-30	Tray 3 up drive motor abnormality	Tray 3
F18-31	Tray 3 up abnormality	
F13-02	LCT paper feed motor abnormality	LCT
F18-50	LCT UP/DOWN motor abnormality	
F46-40 to 43	HDD abnormality	HDD
F62-01	DF motor cooling fan abnormality	RADF
F77-22,25,26	Fold, stitch and fold, three-fold abnormality	Fold, stitch and fold, three-fold
F71-41 to 43	PI abnormality	PI
F77-46,52,53	Stacker fan, PZ folding abnormality	Z-folding
F77-44,47,55	PK, PZ punch shift motor abnormality	PK, PZ

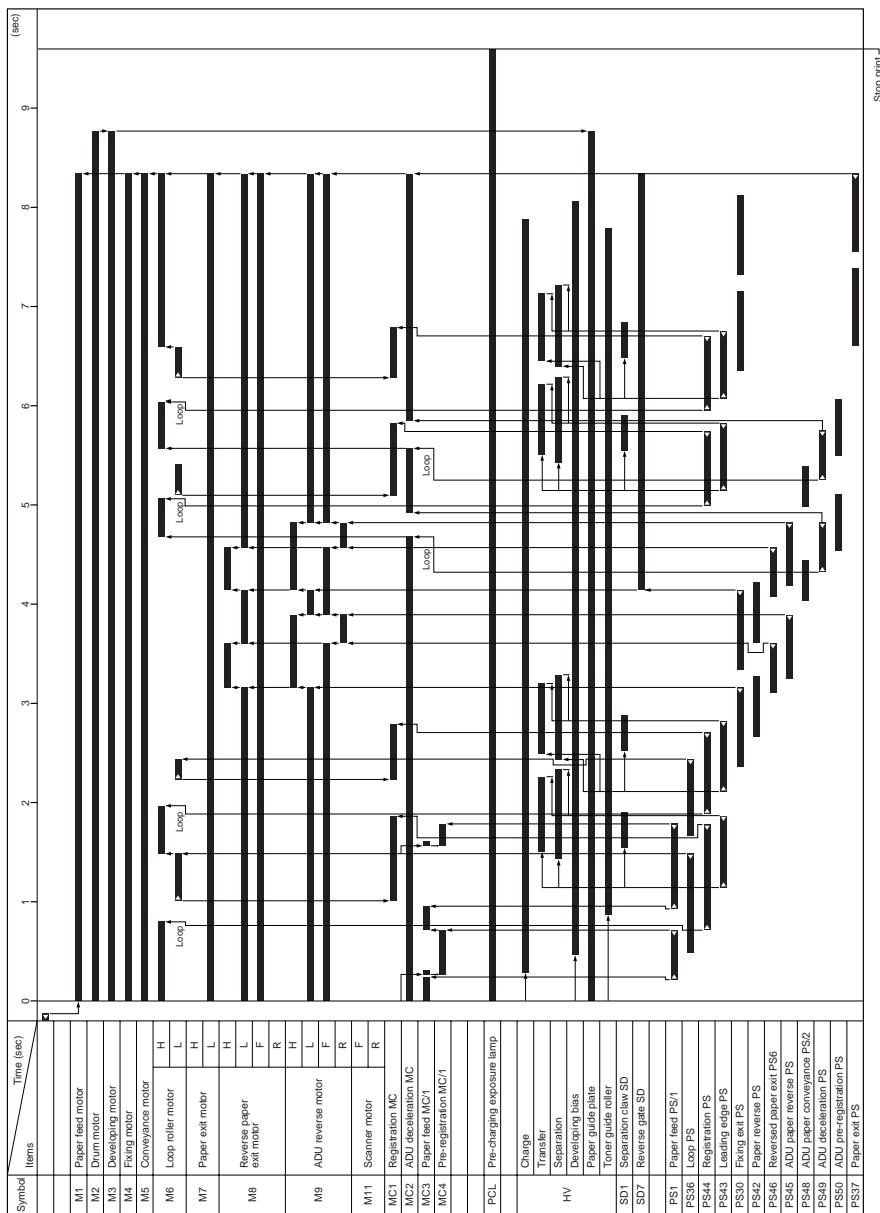
TIMING CHART**[1] Timing Chart (1)**

A4, life size, 1-1 mode, Tray 1, reversed paper exit, non AE, 2 sets



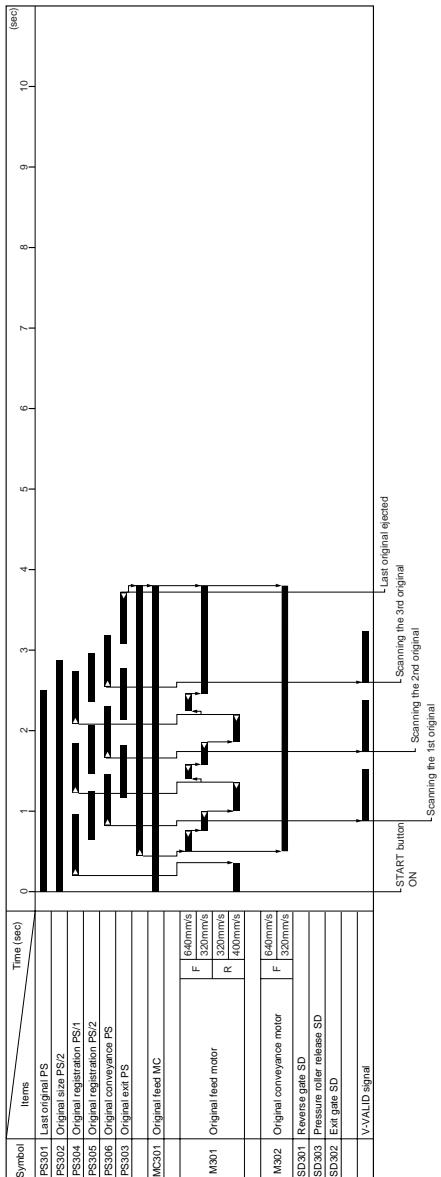
[2] Timing Chart (2)

A4, life size, 1-2 mode, Tray 1, 2 sets

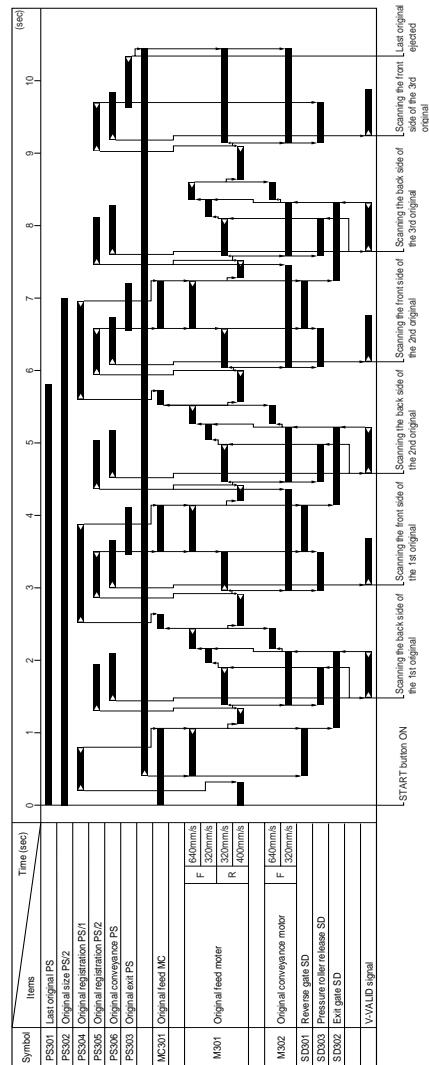


[3] RADF Timing Chart (1)

A4, 3 originals (single side)

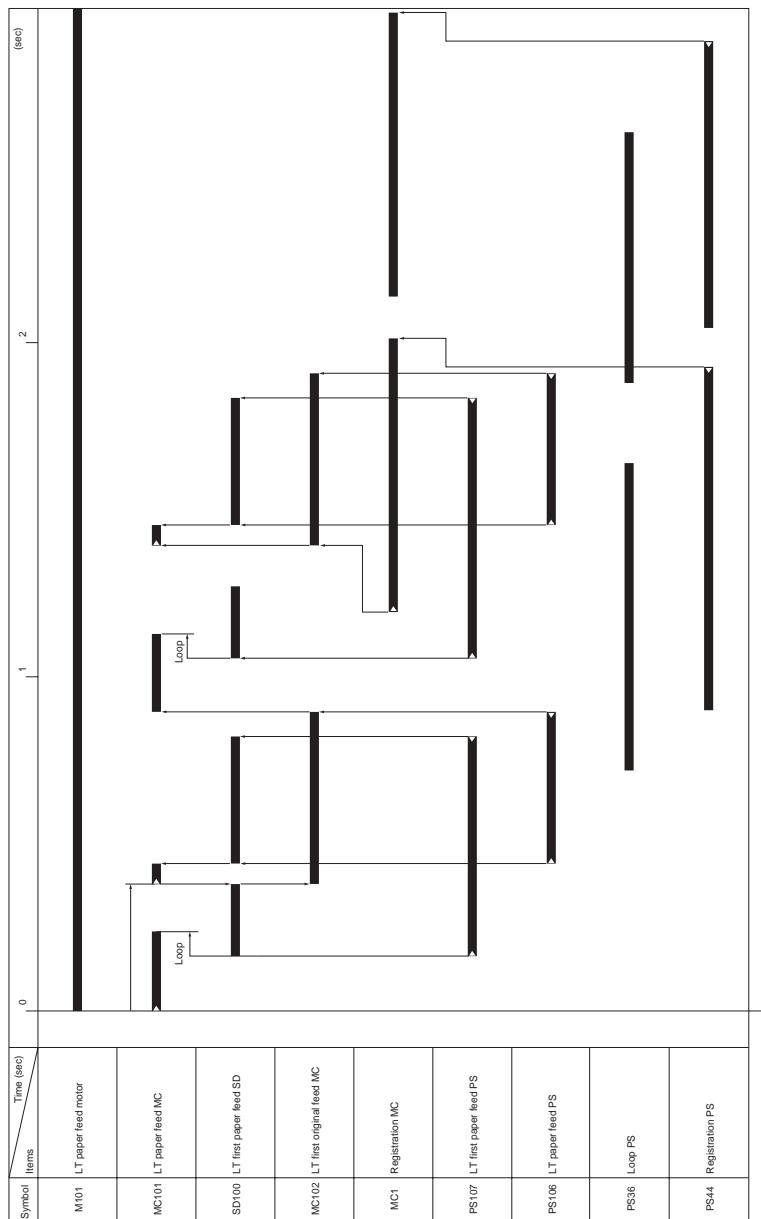
**[4] RADF Timing Chart (2)**

A4, 3 originals (double side)



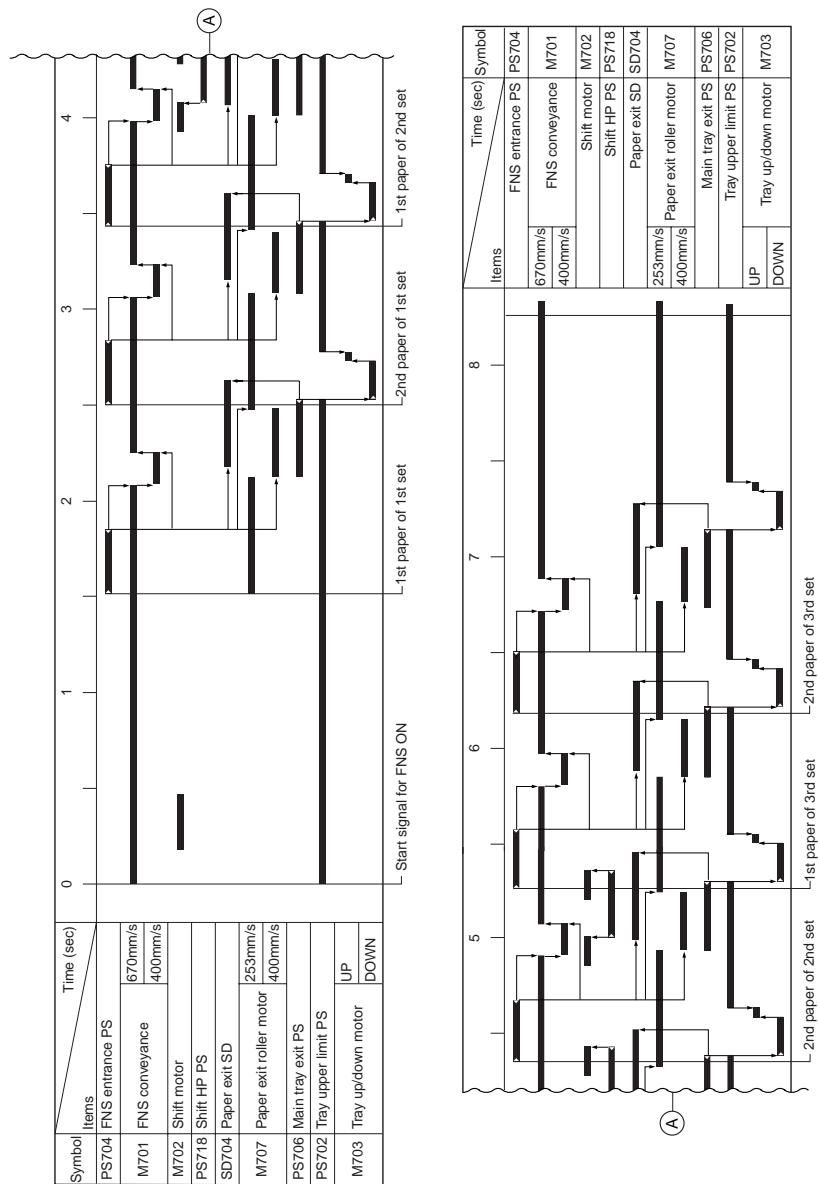
[5] C-403 / C-404 Timing Chart

A4, life size, 1-1 mode, non AE, 2 sets



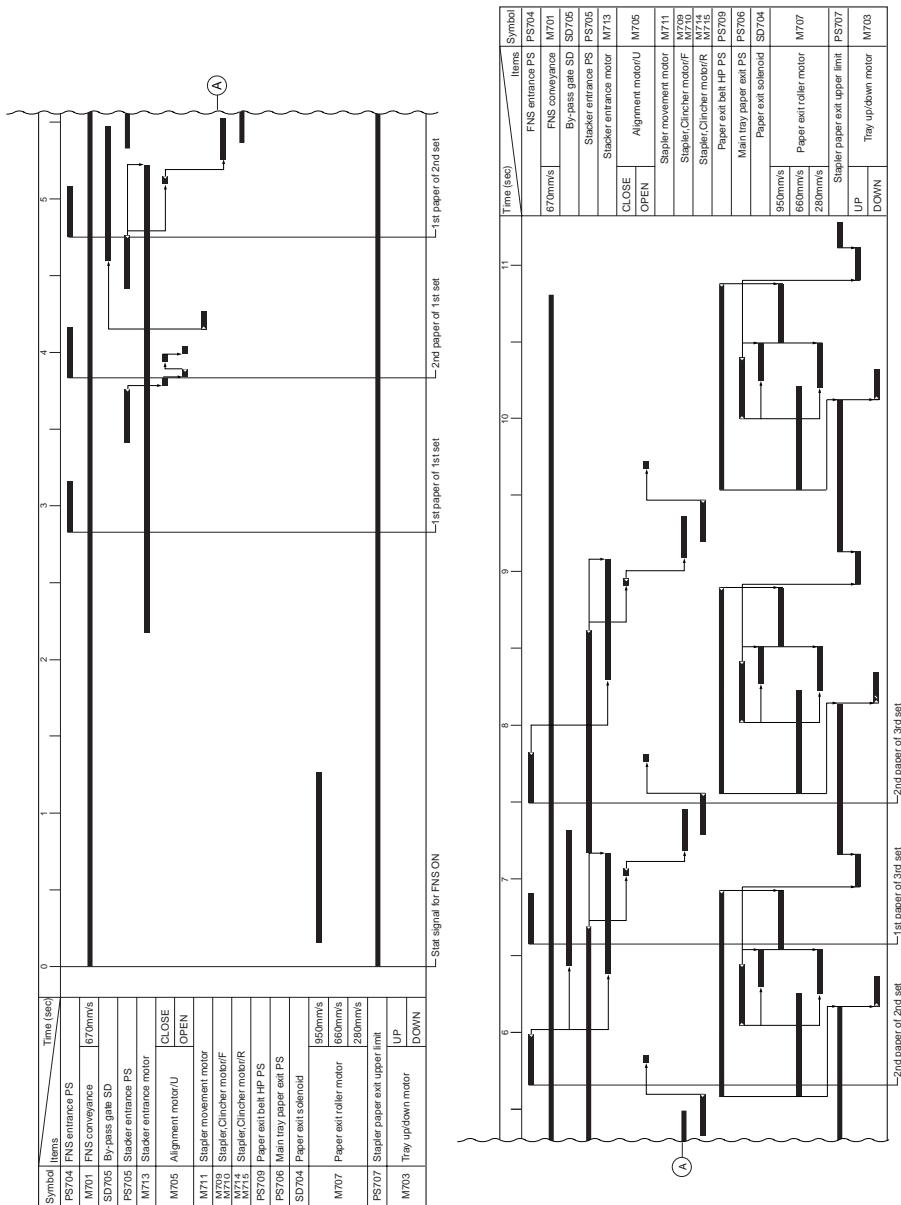
[6] FN-6 / FN-112 Timing Chart (1)

Sort, A4, 2 originals (single side), 3 sets



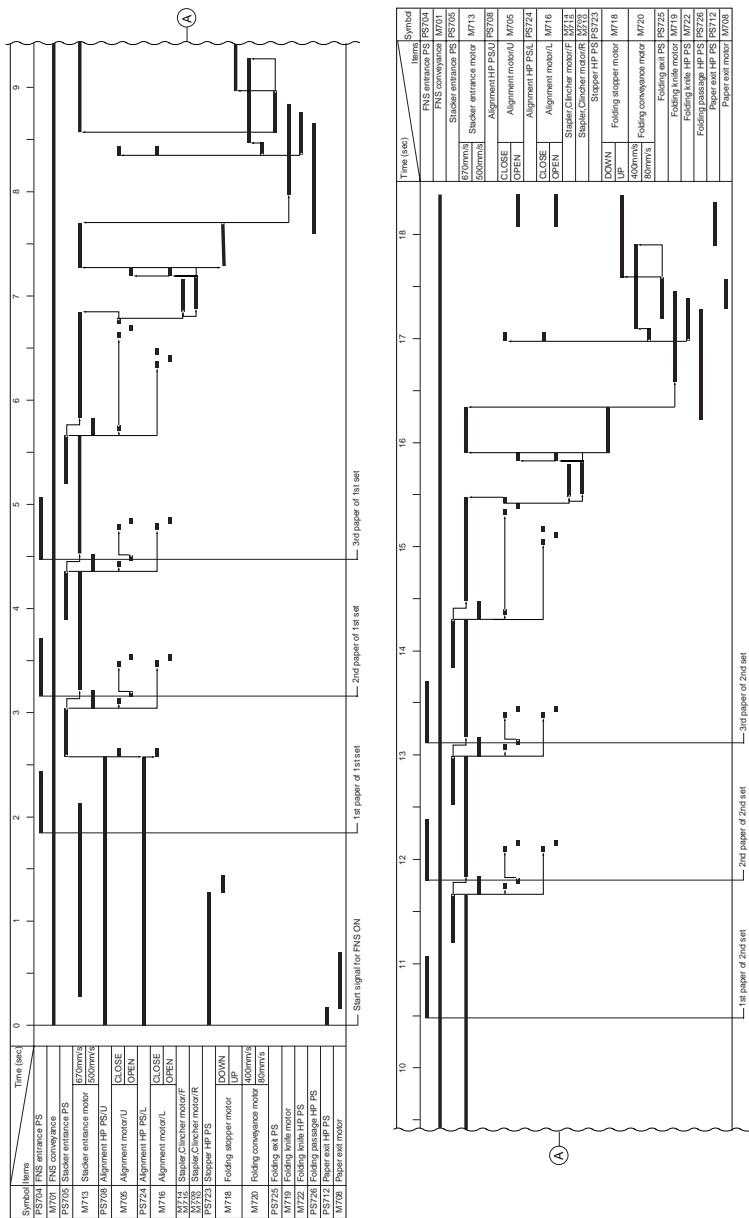
[7] FN-6 / FN-112 Timing Chart (2)

2 staples (flat), A4, 2 originals (single side), 6 sheets (single side)



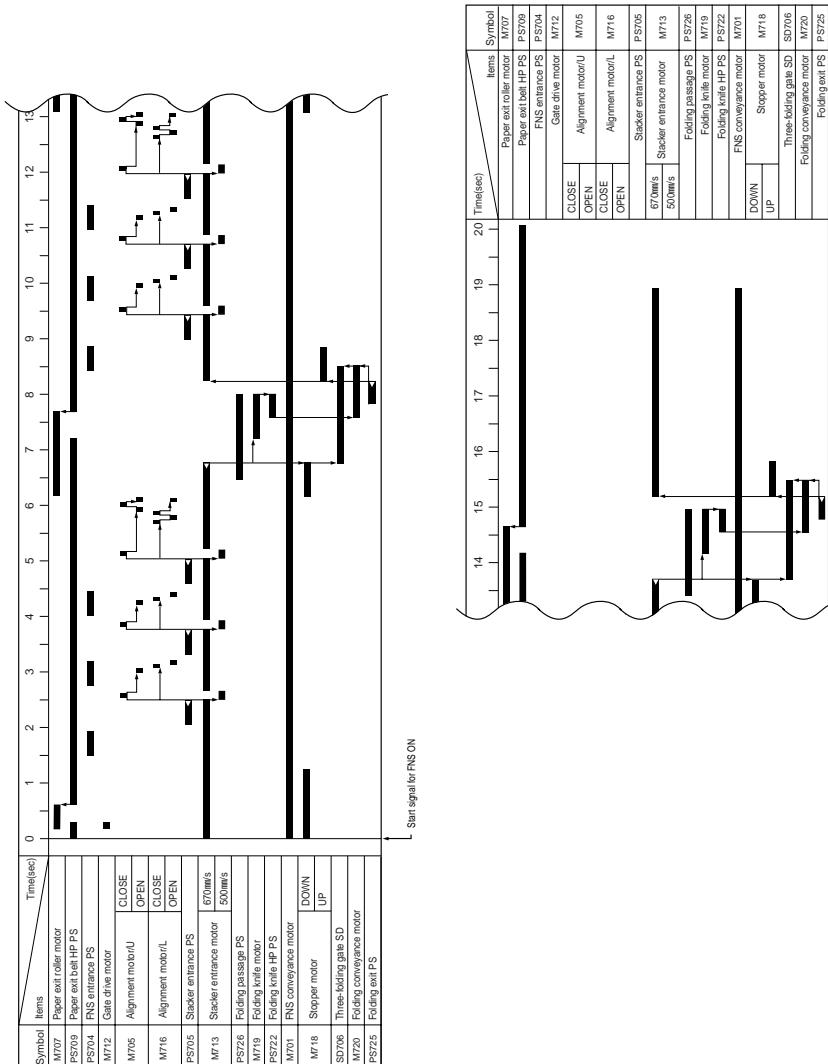
[8] FN-6 / FN-112 Timing Chart (3)

Stitch and fold, A4, 2 originals (single side), 6 sheets (single side)



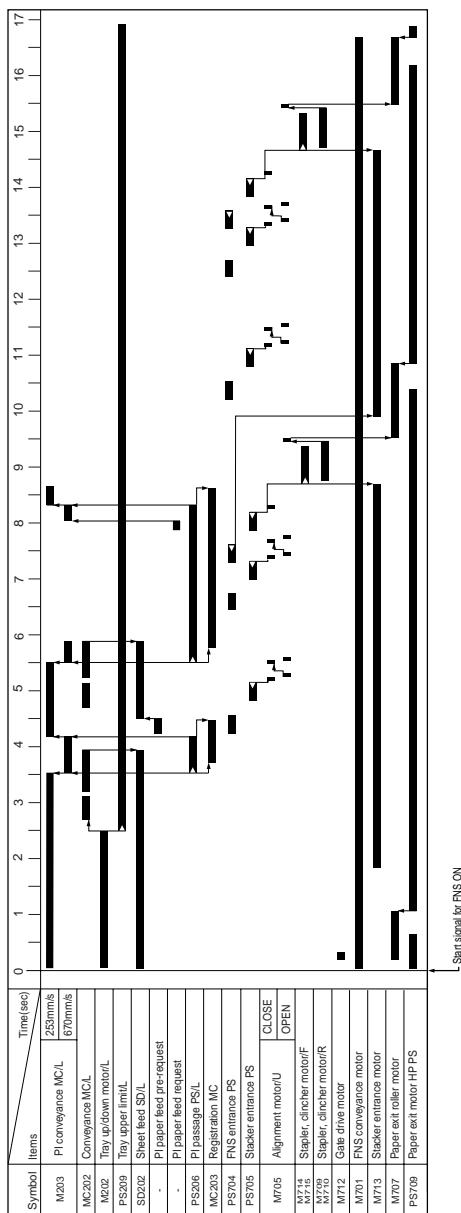
[9] FN-6 / FN-112 Timing Chart (4)

Three-folding/A4R/3 sheets of originals/2 sets setting/single side



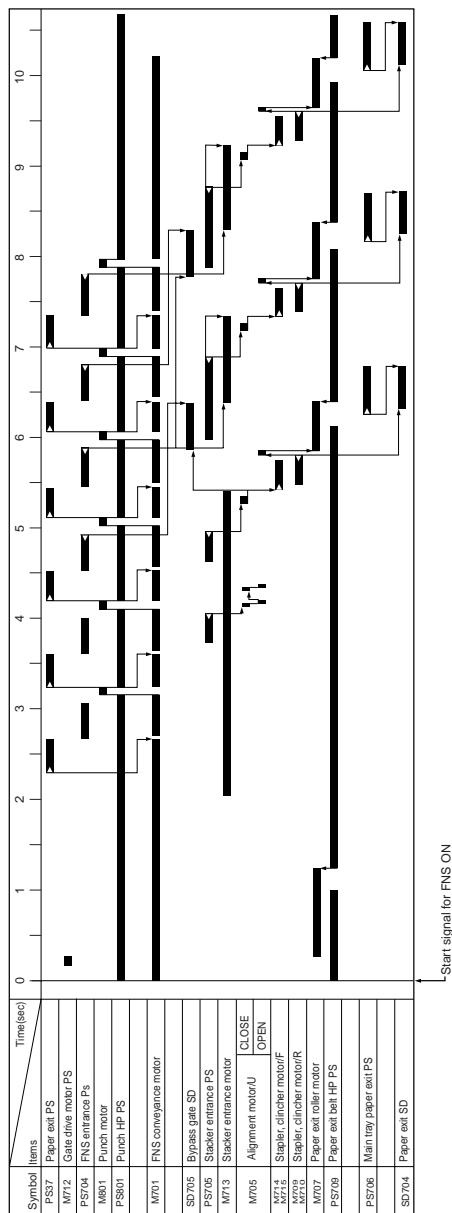
[10] Cover Inserter B Timing Chart

PI automatic paper feed (bottom) /2 staples (flat) /A4/2 sheets of original/2 sets setting/single side



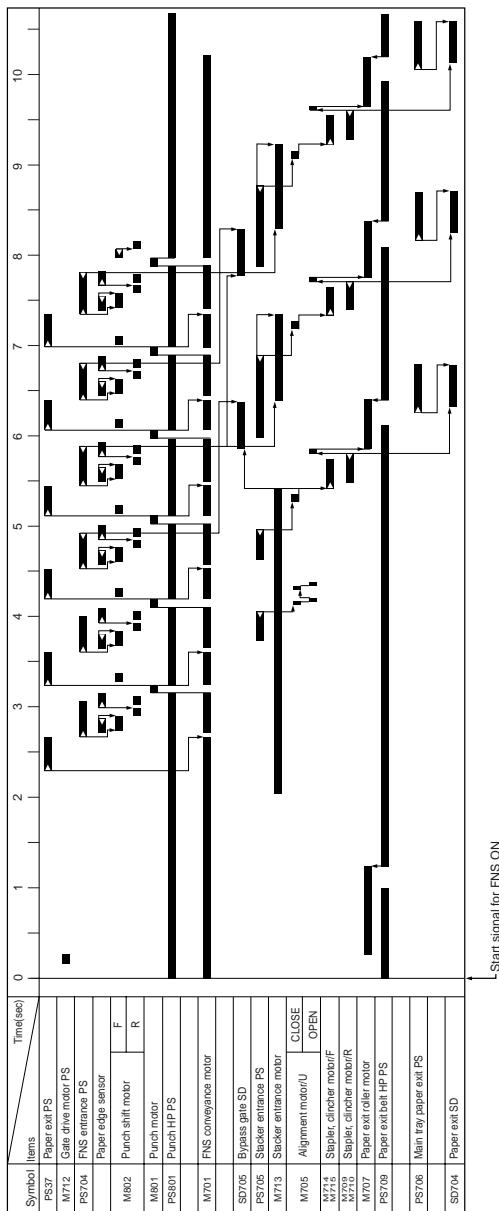
[11] PK-2 Timing Chart

Punch/2 staples (flat) /A4/2 sheets of original/3 sets setting/single side



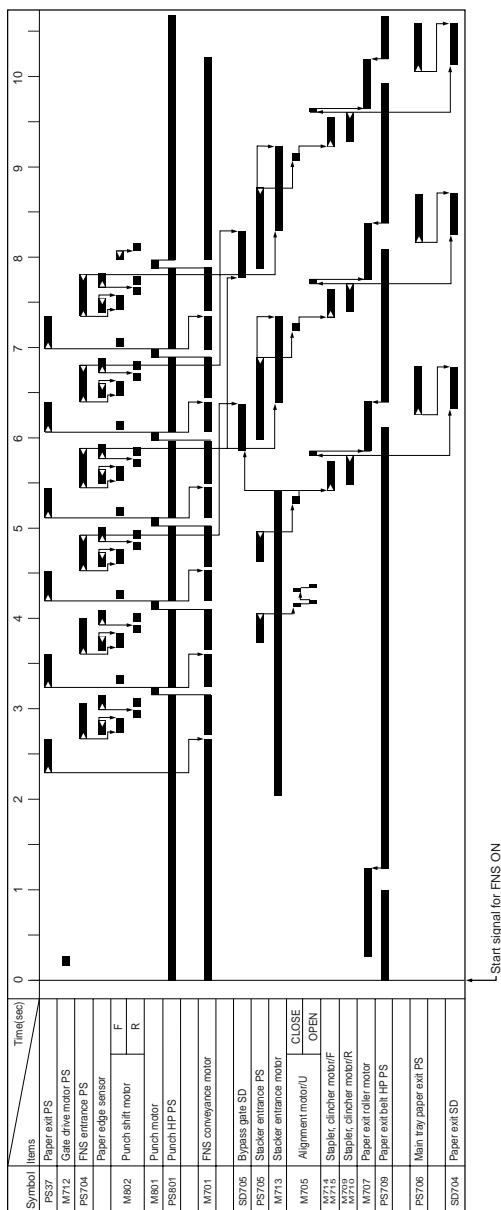
[12] PK-5 Timing Chart

Punch/2 staples (flat) /A4/2 sheets of original/3 sets setting/single side



[13] ZK-2 Timing Chart

Z-folding/ Punch mode/A3/ 3 sheets of original/ single side



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ISW

<\$VOLNUM ISW

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WHAT'S ISW?

ISW (In-System Writer) is a process of updating the control programs stored in flash ROM mounted on various control boards in a Minolta digital copier without isolating the boards from the copier. Running ISW enables you to upgrade control programs without replacing the boards and maintain the boards during their replacement.

Tool available for running ISW include ISW Trns (PC software), which connects a personal computer (PC) to the digital copier.

This tool can be plugged into the ISW connector of the digital copier to directly update the control programs in flash ROM assembled in the machine.

Note: Only ISW Trans is enabled with ISW for this machine.

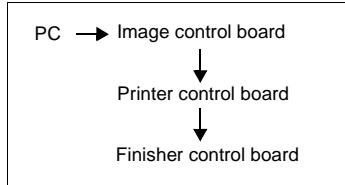
SETUP

[1] ISW-compatible boards

This machine allows ROM data residing on the following boards to be updated via ISW:

- Image control board
- Printer control board
- Finisher control board

[2] Data flow



Important Note:

The availability of the image control program is prerequisite to updating on other boards.

[3] Prepare the copier to start an ISW transfer

1. Transfer modes

The copier supports two transfer modes as described below.

• Power-on mode

If the copier does not have the image control program installed, the program can be sent directly from a PC to the machine when the main switch is turned on.

• 25 mode

The 25 mode will only work if the image control program is installed.

2. Instance of ISW transfer

Instances of ISW transfer are as described below:

• Writing ROM data newly (Ex. when replacing boards)

	Normal startup display	Writing method	Condition
Image control	Flashing timer LED No display on the operation LCD	Writing is enabled with power turned ON.	The copier does not have the image control program installed.
Others	Error code display	25 mode	The copier has the image control program installed.

• Upgrading

	Normal startup display	Writing method	Condition
Image control	Normal	25 mode	The copier has all the programs installed.
Others	Normal		

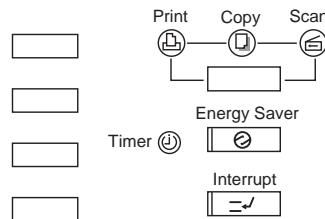
[4] Preparing the copier to transfer

Start the copier with 25 mode enabled to put the copier into ISW transfer wait state.

Step	Procedure
1	Enter 25 mode.
2	[Memory setting mode menu Screen] Press "11 ISW".
3	[ISW mode menu Screen] Select the control board on which to update ROM data.
4	[ISW mode Screen] The Start key appears, indicating the copiers readiness to launch an ISW transfer.
5	Follow operating instructions in Minolta ISW (In-System Writer) Service Hand book.

[5] Relationships between processing states and operational LEDs

Note: This is displayed only when installing the program to graphics control for the first time.



No.	Processing	Timer LED (orange)	Energy Saver LED (green)
1	Initializing CPU now	● OFF	● OFF
2	Checking memory	● OFF	● OFF
3	Memory check error (waiting for data from PC)	○ Flashing	● OFF
4	ISW processing (receiving data)	● OFF	○ Flashing
5	ISW processing (writing to flash ROM)	● OFF	○ Flashing
6	Transfer data error	○ Flashing	○ Flashing
7	Flash ROM write error	○ Flashing	○ ON
8	Memory check successful and reboot	● OFF	● OFF

[6] Rewriting procedure after an error interruption

If errors occur while writing ROM data, it is written the same way as explained in "Writing ROM data newly" in "[3]2. Instances of ISW transfer".

• Image control program

The timer LED (orange) flashes. {Nothing will appear on the operation LCD because the image control board controls the entire unit.}

Retry ISW after turning the main switch OFF, then ON.

• Other control programs

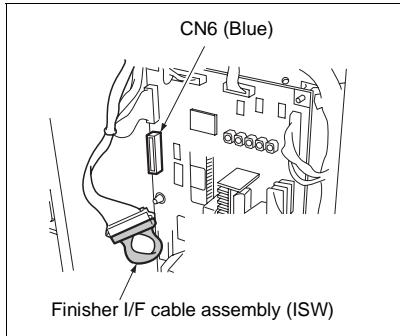
Relaunch the 25 mode to retry ISW. {It is assumed that the copier has the iamge control program successfully installed.}

[7] Preparation when ZK-2 is installed

When Zk-2 is installed, to rewrite the flash ROM of the finisher, change the wiring within ZK-2.

a. Procedure

- (1) Power off the main body.
- (2) Loosen two screws in the lower part of ZK-2 rear cover, remove two screws in the upper part, and then remove the rear cover.
- (3) Disconnect one connector (CN6) of PZ control board (PZCB).
- (4) Remove the finisher I/F cable assembly hanging on the wire saddle in the lower part of PZ control board (PZCB) and connect it to the connector (CN6) of PZCB disconnected in the step (3).



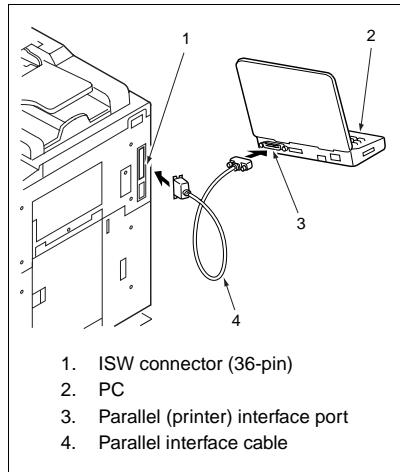
- (5) After completing the rewrite of flash ROM, disconnect the connector from the finisher I/F cable assembly and reconnect the connector to CN6 of PZ control board (PZCB).

[8] Connecting to the ISW connector

The ISW connector is at the right side of the copier.

a. Procedure

- (1) Connect the PC parallel port and the copier ISW connector with a parallel interface cable.



1. ISW connector (36-pin)
2. PC
3. Parallel (printer) interface port
4. Parallel interface cable

[9] Error code table for ISW Setup

Error Code	Description	Action No.
01	There is an error in the command to ISW processing unit.	a
1F	A program error is detected.	a
41	Input data format error.	b
42	Invalid machine name input data.	b
43	Invalid board name input data.	b
81	Input device error such as input timeout. c	c
C1	Failed to erase flash ROM. (during ISW to image control board) e	d
C2	Failed to write to flash ROM. (during ISW to image control board)	d
C3	ROM checksum error. (during ISW to image control board)	e
C4	Output device error such as output timeout.	f
E1	Failed to erase flash ROM. (during ISW to printer control board and FNScontrol board)	g
E2	Failed to write to flash ROM. (during ISW to printer control board and FNScontrol board)	g
E3	Communication error between image control board, printer control board, and FNS control board (during ISW to printer control board and FNScontrol board)	h

<Error code table action classification>

Action No.	Action
a	Program is not executing normally. Restart from power ON and re-execute the ISW.
b	Check the ISW transfer data file.
c	Check that the communication cable between input devices (PC or ISW tool) is properly connected.
d	There is an error in the flash ROM on the image control board. Restart from ISW. If the error persists, the life of the image control board flash ROM may have expired. Replace the image control board.
e	The checksum result after program writing does not match the ROM checksum data of the ISW transfer data file. Restart from ISW. If the error persists, the ISW transfer data file may not be created correctly.
f	An error was detected in the ISW board targeted at that time. Check the ISW board.
g	There is an error in the flash ROM on the printer control board or FNS control board. Restart from ISW. If the error persists, the life of the targeted flash ROM may have expired. Replace the targeted control board.
h	Check the I/F between the image control board and printer control board, or I/F between printer control board and FNS control board.

UPDATING WITH ISW TRNS

[1] ISW Trns Specifications

1. ISW Trns disk organization

Setup disk : 2 disks
Update disk : Dependent on the copier

2. Software environment

OS : Windows 95/98
CPU : Pentium 75 MHz or faster
RAM : 16 MB or more
Hard disk space : 100 MB or more
Others : PC supporting a parallel (printer) interface port

3. Transfer time

Dependent on the copier and personal computer.

4. Prerequisites to running ISW

Personal computer (PC) : 1 unit
IBM compatible (PC/AT with a D-sub 25 pin Parallel (printer) interface)
ISW Trns setup disk : 2 disks
Update ROM data : Dependent on the copier
Parallel cable : 1 (Anphenol 36-pin-D-sub 25-pin; Centronics; within 2 meters in length)

* Windows 95/98 is a registered trademark of Microsoft Corporation.

* Pentium is a registered trademark of Intel Corporation.

[2] Setting Up ISW Trns

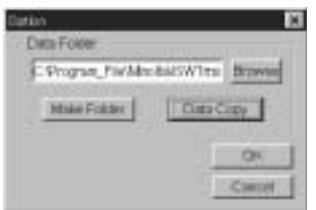
1. Installing the application program

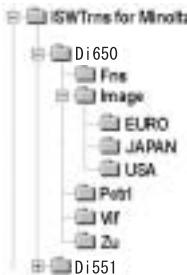
Install the ISW Trns on the PC.

Step	Procedure
1	Boot the PC.
2	Mount setup disk 1 on the PC and double-click the [Setup.exe] icon to start the installer. Note: If an old version ISW Trns program is present, uninstall it first, then start the setup operation.
3	[ISW Trns setup window] Confirm the installation folder as instructed by on-screen guidance and click Next. Note1: By default, the program installs in [C:\Program_File\Minolta\ISWTrns for Minolta]. Note2: To change the installation folder, click Browse and type a new folder name.
4	[Program folder confirmation window] Confirm the ISW Trns program installation folder as instructed by on-screen guidance and click Next. Note1: By default, the ISW Trns program installs in [ISWTrns for Minolta]. Note2: To change the installation folder, either type a new folder name or select one from the list of existing folders on display.
5	[Next disk insertion request window] Mount setup disk 2 as instructed by on-screen guidance and click OK.
6	[Information dialog box] Click OK as instructed by on-screen guidance. Note: This procedure will add an ISW Trns icon to the Start menu.
7	[Setup completion window] Click Complete as instructed by on-screen guidance.
8	The ISW Trns install exits automatically.

2. Setting up ISW Trns

When the ISW Trns program has been installed on the PC, run it to set up a folder in which the transfer file (update data) is stored. When this setting completes, the ISW Trns program is ready to run.

Step	Procedure
1	Boot the PC.
2	[Select [ISW Trns] from the start menu to run the ISW Trns program.
3	[ISW Trns dialog box]  Click OK to set up a folder in which the transfer file (update data) is stored. Note: This dialog box will not appear when ISW Trns is run next time.
4	[Option window]  Set up a folder in which the transfer file (update data) is stored and click Make Folder. Note1: By default, the folder in which the ISW Trns program has installed (C:\Program_File\Minolta\ISWTrns for Minolta) has been set up as a storage folder (data folder). Note2: To change the storage folder, click Browse and select a new folder or type its full-path name in directly the edit box.

Step	Procedure
	<p>Note3: Clicking Make Folder will create the following hierarchy of folders branching off from the new storage folder:</p>  <pre>graph TD; A[ISWTrns for Minolta] --> B[Di650]; B --> C[Fns]; C --> D[Image]; D --> E[EURO]; D --> F[JAPAN]; D --> G[USA]; D --> H[Pctrl]; D --> I[Vit]; D --> J[Zu]; B --> K[Di551]</pre>
	<p>Note: Pctrl and Vit Indications can not be function.</p>
5	[Option window] Click OK. Note: This procedure will save the data folders created in Step 4 to the INI file for the ISW Trns program.
6	[ISW Trns main window] The ISW Trns main window opens.

3. ISW Trns Main Window Overview

The ISW Trns program, when run, comes up with the ISW Trns main window. The ISW Trns main window lets you select, verify, and transfer a transfer file (update data) and display information in it. A detailed description of its functions follows:



* Sample display : Display information may be different from what you actually will see on your machine.

① A Select Type frame

Select conditions for a transfer file (update data). When you select all the four combo boxes, folder ⑤ is set up on the basis of the information set in the INI file.

The settings of the combo boxes selected are saved to the ISW Trns.INI file when you click File Send. The ISW Trns program comes up with the ISW Trns main window prefilled with these combo box settings when runs next time.

② Version selection frame

This frame lets you select which version of a transfer file you want transmitted when more than one version is stored in a single folder.

③ Send file information frame

List the files that are transferred actually on the basis of the information specified in frames ① and ②. Click File Check to view a checksum of each file and its consistency (OK, NG or ??).

④ File Status frame

View detailed information about the version file as it is selected in ⑥.

The table below presents differences in the ways transfer files are displayed according to their data distribution types.

Data sources appearing in the detailed file information list

Display title	ORIGINAL (Batch data)	DIVIDE (Divided data)
File Name	File name of the version selection file	File name of the version selection file
File Date	Date of the version selection file	Date of the version selection file
File Time	Time of the version selection file	Time of the version selection file
File size	File size of the version selection file	File size of the version selection file
ROM Version	Footer information	Footer information (last file)
SP ROM Version	Footer information	Footer information (last file)
Message Conversion	For development use	For development use
Machine Name	Header information + INI file	Header information + INI file
Country	Combo box display	Combo box display
Board Name	Header information + INI file	Header information + INI file
Data Format	Header information (Binary)	Header information (Binary)

⑤ Version Folder edit box

When Select Type frame ① is established, the full-path folder name is displayed to reflect the data folder and the INI file information set up in the option window. If the transfer file exists in a folder different from the data folder, change the folder name to that folder by using Browse ⑦ or rewriting the folder name directly.

Those transfer files in the folder that meet the INI file conditions are listed in File list box ⑥.

⑥ Version File selection list box

Lists those display files existing in the folder set in ⑤.

Display Files are marked by a wildcard name (such as 26nac*.bol) in the ISWTrns.INI file. If multiple versions of a file exist in the folder, therefore, multiple versions would appear in this list box accordingly.

Example: 26nac001AAA.bol
26nac002AAA.bol

The files in this list are sorted by name. When the list opens, the last display item in the list is pre-selected. Change the choice to establish the version of transfer files to transmit.

⑦ Browse Version File button

Click Browse button to open the folder selection window and select a folder for ⑤.

⑧ Send file information display list

List the names of files that are actually transmitted when a version file is selected in ⑥. A count of the number of files that are actually transmitted is indicated in a checksum file attached to each transfer file (write data). If not all the transfer files are stored in folder ⑤ or if extra files are included in it, the error message "Send files not found or invalid file name in the folder" is displayed. This check is not made.

Clicking the File Check button in ⑨ calculates a checksum of the display files as a whole and compares it with the checksum stored in the checksum file (*.SUM) attached to the transfer file (write data), displaying the result of that comparison.

⑨ File Check button

Click this button when send files are listed in the Send File Info list in ⑧, and a file checksum of the transfer files displayed (file checksum) is calculated and attached to each file. Further, the calculated checksum is compared with the checksum storage file (*.SUM) attached to the transfer file (write data) to display the result of the comparison in the following format:

[OK] = Matched

[NG] = Unmatched

[??] = Checksum file (*.SUM) not found

⑩ File Send Button

Perform transmission of transfer files

4. Parallel port setup

If a parallel data transfer is to be executed with the ISW Trns program, the ECP mode setting of the PC parallel port should be cleared. ISW Trns does not support parallel data transfers. If a parallel data transfer is launched with the PC set in ECP mode, the transfer could be aborted by an error occurring in between. It would be necessary, therefore, to disable ECP mode before run ISW Trns on a PC with the ECP setting.

Instructions on how to disable ECP mode are given below.

Step	Procedure
1	Boot the PC.
2	Open the System icon in the Control Panel and click the Device Manager tab. Then, search for LPT1 in Ports (COM/LPT1). Note1: If LPT1 appears as "ECP Printer Port (LPT1)," then it is an ECP port. Note2: If LPT1 appears as "Printer Port (LPT1)," then it is a regular parallel port.
3	With an ECP printer port, change the BIOS setting of the PC to disable the ECP port. Note: Because the BIOS setting depends on the PC, check with your system administrator on how to disable ECP mode.
4	When the BIOS change is complete, open the System icon in the Control panel and change the parallel port driver.
5	Run a send test to verify the successful operation. Note: If a transfer succeeds on one copier model, then transfers would be successful on all models.

[3] Copying Transfer Data (Update Data)

Run the ISW Trns program to copy transfer data (update data) to the PC.

Step	Procedure
1	Boot the PC.
2	Select ISW Trns from the Start menu to run the ISW Trns program.
3	Click the Option menu.
4	[Option window]
5	[File Copy window]
6	Select the folder on drive A that contains the transfer file (update data) as a source file. Note1: The selected folder is displayed in the upper section in the Original Files field. Note2: The transfer files (update data) that are stored in the selected folder are displayed in the lower section in the Original Files field.
7	Select the transfer files (update data) you want copied from the lower section in the Original Files field. Note1: You can select multiple transfer files (update data). Note2: To copy all the files (update data) displayed, skip this step to go to Step 8 directly.

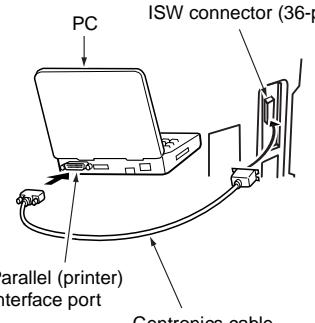
Step	Procedure
8	Click Copy to copy the selected transfer files (update data) to the folder created at ISW Trns setup. Note1: To copy all the files (update data) displayed in the Original Files field, click Copy All, instead of Copy. Note2: The folder name created at ISW Trns setup is displayed above the Copied File field. Note3: The transfer files that have been copied successfully so far are listed in full-path name in the lower part of the Copied File list view. The transfer files that have not been copied successfully are listed in the Failed to Copy Files list view. Causes of copy errors: 1. A file with the same name existed and the O/W (overwrite) check box was not checked. 2. The storage destination folder could not be found. 3. Attempted to overwrite an over-write protected file. Note4: To update existing transfer files (update data), check the O/W (over-write) check box.
9	When the copying completes, click Refresh.
10	If more update disks are involved, repeat Steps 5 to 9.
11	Click Cancel to return to the option window.
12	[Option window] Click OK.

[4] Connecting

Connect a parallel interface cable to the copier.
Prerequisites to cabling are:

- A PC to which transfer files (update data) have been copied.
- A parallel interface cable (Anphenol 36-pin-D-sub 25-pin)

Note: For instructions on how to connect a parallel interface cable to the copier, refer to the ISW section of the service manual supplied with the copier.

Step	Procedure
1	Turn OFF the copier main switch.
2	Turn OFF the PC power switch.
3	Connect the PC parallel port and the copier ISW connector with a parallel interface cable. 

[5] Updating

1. Update operation overview

Follow the steps below to update the ROM data on each control board using ISW Trns. For more operational details, see the relevant parts of this section.

Step	Procedure
1	Check the ROM version of the copier before proceeding with updating. (See 2, "Checking the ROM version of the copier (before updating).")
2	Run the ISW Trns program. (See 4, "Running ISW Trns".)
3	Set the copier in ISW receive mode. (See 3, "Preparing the copier to transfer.")
4	Select conditions for transfer files (update data) with IWS Trns. (See 5, "Selecting transfer file (update data) conditions.")
5	Select a version of transfer files (update data) with IWS Trns. (See 6, "Selecting a version of transfer files (update data).")
6	Verify the transfer files (update data) selected with IWS Trns. (See 7, "Verifying transfer files (update data).")
7	Transmit the transfer files (update data) with IWS Trns. (See 8, "Transmitting transfer files (update data).")
8	To update ROM data on more control boards, repeat Steps 3 to 7.
9	Exit the ISW Trns program. (See 9, "Exiting ISW Trns.")
10	Verify the ROM version of the copier after updating. (See 10, "Verifying the ROM version of the copier (after updating).")

2. Checking the ROM version of the copier (before updating)

Before updating ROM data, check the ROM version of the existing control program in the 25 mode.

Step	Procedure
1	Turn OFF the copier main switch.
2	Turn ON the copier main switch while holding down the copy count setup buttons 2 and 5, to enable 25 mode.
3	[25 mode menu window] Check the ROM version by following the copier-specific procedure. Note: For operating instructions, refer to the Adjustment section of the service manual supplied for the copier.

3. Preparing the copier to transfer.

Start the copier with 25 mode enabled to put the copier into ISW transfer wait state.

Step	Procedure
1	Turn OFF the copier main switch.
2	Turn ON the copier main switch while holding down the copy count setup buttons 2 and 5, to enable 25 mode.
3	[25 mode menu window] Put the copier into ISW transfer wait state by following the copier-specific procedure. Note1: "ISW transfer wait state" is the state of the copier with the "START" key being shown in the display area. Note2: For operating instructions, refer to the Adjustment section of the service manual supplied for the copier.

4. Running ISW Trns.

Run the ISW Trns program.

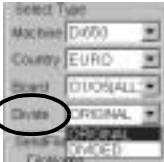
Step	Procedure
1	Boot the PC.
2	Select ISW Trns from the Start menu and run the ISW Trns program.

5. Selecting transfer file (update data) conditions

Select various conditions for selecting the transfer files (update data) in the ISW Trns main window. Conditions to select are:

- (Machine) The name of the model on which ROM data is updated.
- (Country) The destination of the transfer files (update data)
- (Board) The name of the board on which ROM data is updated
- (Divide) The type of the transfer files (update data)

Step	Procedure
1	[ISW Trns main window] In the ISW Trns main window, click ▼ in the [Machine] field in [Select Type] and select the name of the model on which to update ROM data from the pulldown menu. 
2	In the ISW Trns main window, click ▼ in the [Country] field in [Select Type] and select the destination of the transfer files (update data) from the pulldown menu. 
3	In the ISW Trns main window, click ▼ in the [Board] field in [Select Type] and select the name of the board on which to update ROM from the pulldown menu. 

Step	Procedure
4	<p>In the ISW Trns main window, click ▼ in the [Divide] field in [Select Type] and select a method of dividing the transfer files (update data) from the pulldown menu.</p>  <p>Note1: Normally, select ORIGINAL as the method of division. Note2: Select DIVIDED for large ROM data (e.g. for Main Control Unit), that is divided into several files (extension .001.b01, etc.) to be stored to several floppy disks for distribution.</p>

6. Selecting a version of transfer files (update data)

When a transfer file (update data) has been chosen to meet a given set of conditions, it may be available in multiple versions. Here, select a particular version of a transfer file (update data) for use in the actual data transfer.

Step	Procedure
1	<p>[ISW Trns main window] In the ISW Trns main window, select a transfer file (update data) of the version that is used in the actual data transfer from among the files listed in the [File] field in [Version].</p>  <p>Note: The version of a transfer file (update data) can be determined from its file name. Example: 26nac001AAAA.b01 .. Version 1 26nac002AAAA.b01 .. Version 2</p>
2	<p>The target file (update data) may not be shown in the [File] field in [Version], if it exists in a folder different from the data folders set in the Option screen. Click Browse and find the appropriate file to select.</p>  <p>Note: Clicking Browse will open the Select File window.</p>

7. Verifying transfer files (update data)

Once a particular version of a transfer file (update data) is selected, the transfer files (update data) that are transmitted actually are listed in [Send File Infor] in the ISW Trns main window. Verify the validity of the transfer files (data) for transfer.

Step	Procedure
1	[ISW Trns main window] In the ISW Trns main window, click File Check in [Send File Infor]. 
2	Check to see if OK appears in the [File Sum] field in [Send File Infor] in the ISW Trns main window. Note1: A file that is labeled NG is inappropriate as a transfer file (update data). Try to copy the file again. If you can not succeed to copy it again, the original file may be corrupted. Note2: Transfer files (update data) may be marked ?? when enough information is not available to verify their validity. When a transfer file is labeled, check if the checksum file (*.sum) was copied correctly.

8. Transmitting transfer files (update data)

When transfer files (update data) are established, run a data transfer to the copier.

Step	Procedure
1	Press the "START" key on the copier while it is in ISW transfer wait state. Note: The "START" key is displayed in the display area on the copier.
2	[ISW Trns main window] Click File Send in [Send File Infor] in the ISW Trns main window. 
3	Transfer files (update data) are transmitted to the copier. Note1: While data is being transferred to a copier, an LED or indicator flashes to indicate a data transfer in progress. The mode of such indication varies from one copier to another. Note2: ISW Trns produces an indication to designate a data transfer in progress. Note3: If a data transfer is aborted due to any trouble occurring with the copier or ISW Trns, turn the copier main switch OFF, then ON to retry the data transfer by ISW Trns. In this case, a condition indication and necessary operation vary depending on each model. Please refer to service manual for the copier.
4	To update ROM data on more control boards, repeat the step in 5, "Selecting transfer file (update data) conditions," to 8, "Transmitting transfer files (update data)."

9. Exiting ISW Trns.

When the update of the ROM data on the control boards completes, exit the ISW Trns program.

Step	Procedure
1	Exit the ISW Trns program.
2	Turn OFF the PC.
3	Turn OFF the copier main switch.
4	Disconnect the parallel interface cable from the PC and the copier. Note: Turn OFF the PC and copier before disconnecting the parallel interface cable from them.

10. Verifying the ROM version of the copier

(after updating)

When the update of the ROM data completes, verify the ROM version of the control program in the 25 mode.

Step	Procedure
1	Turn OFF the copier main switch.
2	Turn ON the copier main switch while holding down the copy count setup buttons 2 and 5, to enable 25 mode.
3	[25 mode menu window] Check the ROM version by following the copier-specific procedure. Note: For operating instructions, refer to the Adjustment section of the service manual supplied for the copier.

ISW TRNS MESSAGES

The ISW Trns program displays dialog messages when errors occur and when processing ends. Definitions of these messages are listed below, along with the associated display status.

Message	Display status
Cannot open a checksum file	Opening of a checksum file failed. Possible causes include a corrupted file and a file in use.
Cannot read a checksum file	Loading of a checksum file into memory failed. Possible causes include a shortage of memory and an OS problem.
Cannot open a file	Opening of a send file failed. Possible causes include a corrupted file and a file in use.
File transmission complete	File transfer completed.
Cannot open the LPT port	Opening of the LPT port failed.
Communications port setup acquisition error	A call to GetCommState failed.
Communications port setup error	A call to GetCommState failed.
Cannot open a send file	Opening of a send file failed. Possible causes include a corrupted file and a file in use.
Cannot send a Term Test file	Transmission of a communications test block failed. 1. The copier is not ready to receive. 2. The cable is out of position. 3. Transmission of the wrong send file was attempted.
Unsuccessful file transmission	The transmission of a send file failed. Possible causes include a cable out of position.
Unsuccessful transmission to the LPT port	Output to the LPT port failed. Possible causes include a cable out of position.
Starting file transmission. OK?	A message seeking confirmation at the start of file transmission.
Send file not selected	No files exist on the send file list.
Canceled	Transmission of a file in progress was canceled. CANCEL is normally hidden. Its setting can be altered with the INI file.
Default data folder created	A data folder was created by clicking Create Folder.
Invalid folder name	An invalid folder name was entered. Start a folder name with a drive name, such as C:\.
Default data folder not set. Set a folder.	A data folder is not set in ISWTrns.INI. This message is displayed when ISW Trns launches for the first time.
Unsuccessful thread creation	The creation of a thread failed.
Copying the selected file. OK?	File copy start message
Copying all files to the default data folder. OK?	File copy start message
No send file available	No file to copy file is selected or exists in the folder.
Unable to copy several files	1. The destination folder does not exist. 2. When the Overwrite check box is not checked, an attempt is made to copy to a file having the same file name. 3. An attempt is made to overwrite a protected file 4. Any other cause (such as a file being used by another application or OS problem)

Message	Display status
File copying end	File copying completed.
Send file not found, or invalid file name in the folder. Check.	<p>The number of divisions of a send file recorded in the folder. Check. checksum file and the number of files actually existing do not match.</p> <p>1. A file having an invalid file name exists in the data folder. Delete possibly invalid file names from the folder list.</p> <p>2. The number of files in a divided file is wanting. Identify the wanting files in the folder list and recopy them.</p>

TROUBLESHOOTING ISW Trns

If errors occur while running the ISW Trns program, take the actions suggested below to correct them.

1. Unable to run ISW Trns

- Corrupted ISWTrns.EXE file
→ Set up again.
- The setup disk is corrupted.
→ Verify the setup disk and then set up again.

2. Send file is not displayed when a combo box item is selected

- The send file is not stored in the folder.
→ Check to see if the send file is stored in the folder appearing in the [Folder] text box in [Versions]. Use the [File Copy] function if the file storage location is unknown.
- Check to see if the base data folder setting in the option window is not wrong.
→ Verify the base folder setting. Use the [File Copy] function if the file storage location is unknown.
- Invalid file name (altered)
→ The file name of a file must be used exactly as it is delivered. If a file is renamed, it cannot be displayed or selected. If a file name has been altered, return it to its original file name.
- Invalid folder name (altered)
→ If a folder as created with [Make Folder] in the option window is renamed, it cannot be located. Restore the original folder name and check.

3. NG produced by a file check

- Corrupted send file
→ Copy the file again and recheck. If NG re-curs, check with the vendor of that file.

4. ?? produced by a file check

- With any other model, the checksum file (*.SUM) had not been copied when the send file was copied to the PC.
→ Copy the checksum to the same folder as the file is copied. It would be copied automatically if the [File Copy] function is used.

5. Unsuccessful file transfer

5.1 “Cannot open a file” error

- The file is used by any other program or by the system.
→ Close that other program. If the file transfer still fails, reboot Windows.

5.2 “Cannot send a Term Test file” error

- The cable is not in firm position.
→ Check to see if the cable is inserted in firm position or if the cable is not impaired.
- The copier is not ready to receive.
→ Check to see if the copier is ready to receive.

5.3 “Unsuccessful transmission to the LPT port” error

- The cable is not in firm position.
→ Check to see if the cable is inserted in firm position or if the cable is not impaired.
- Invalid data has been transmitted.
→ Check from the file information window to see if the receive mode (receiving board type) of the copier and the send file on the PC match.
- If the file is transmitted for the first time, check with its vendor.
- The PC parallel port is set in ECP mode.
→ Consulting the manual, free the parallel port from ECP mode.
- Compatibility between the PC parallel port and the copier port.
→ Verify by testing on a PC with proven transmission performance.
- Use a cable shorter than 2 meters in length..